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A PRIMER OF AGRICULTURAL ECONOMICS

A PRIMER OF AGRICULTURAL ECONOMICS

By SIR HENRY REW, K.C.B.

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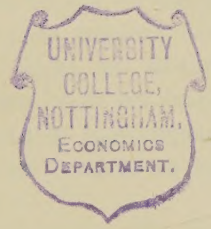

LONDON
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recently issued by the Ministry of Agriculture and Fisheries. The Report on the Agricultural Output of England and Wales, which contains much information on some of the points included in the book, was not published until after it was completed.

HENRY REW.

THE OLD RECTORY, WORMSHILL,
KENT.
May, 1927.

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INTRODUCTION

THE importance of Economics, or Political Economy, as the older writers termed the subject, is now generally recognized. If "the proper study of mankind is man," the study of "man's actions in the ordinary business of life," as Marshall defines the scope of Economics, is essential. In its elements the science of Economics is simple. Law has been described (by a lawyer) as organized common sense, and Economics may be described as systematized business. Like M. Jourdain, who was surprised to find he had been talking prose all his life, the average business man, who may never have looked at a text-book on the subject, does not realize that he is practically applying the principles of Economics every day. But a mastery of Economics as a science is not a simple matter. While it is the distinction of modern economists that they have enlarged and humanized the science, they have also so elaborated it as to render the serious study of it a formidable undertaking, from which the average man shrinks.

If some knowledge of Economics is desirable, if not imperative, for the mental equipment of the man of business, and a systematic study of the

science is not to be expected of him, the alternative is the specialization of the subject so as to adapt it to his particular needs. Thus treatises on the Economics of Banking, the Economics of Transportation and so forth have been prepared. In recent years it has been realized that the Economics of Agriculture are peculiarly suited to separate treatment as a branch of Economics on the one hand and of Agriculture on the other.

The principles of Economics are of general application, but in applying them to the business of farming they have a special significance. The science of Economics is concerned with the production and distribution of wealth, and wealth has been described as made up of all those things desired by man which can be obtained only by the expenditure of human effort. The effort exerted by those who use the Land for Agriculture is of a different order to that exerted in any other business, and as the subject is considered, other points of differentiation will arise.

Agriculture is primarily a business. It has sometimes been described as an art and sometimes as a science, but though its pursuit involves technical skill and exact knowledge, it does not differ, in that respect, from many other industries. The utilization of land for the purpose of extracting therefrom products of economic value is a commercial enterprise undertaken with the object of making a profit. Whether the agriculturist wins from the soil only the means of subsistence for himself and his family

or an excess of products for exchange or sale, his object is to make an income in kind or in cash, which is the object of all who engage in business.

Agricultural Economics, therefore, is concerned with the business of farming and is not directly concerned with its practical or scientific aspects.

The definition of Agriculture is less obvious than would at first sight appear. Even a definition of British Agriculture is not quite simple. It is not long since the cultivation of vegetables and fruit for sale was distinguished from Agriculture and termed Market-gardening. The distinction still lingers, but it is clear that in these days no line of demarcation exists. But dispute still arises as to whether, for example, Poultry-farming, Bee-farming, and other specialized industries of a like kind fall within the proper definition of Agriculture. And a wider survey arouses further doubts. In some countries a distinction is sharply drawn between the farmer and the pastoralist or rancher. The British farmer would question whether the cultivation of rubber, of palms, or of cotton was properly termed Agriculture, and would cite the fact that cultivators of such crops are usually termed not farmers but planters. Sericulture would commonly be considered as separate from Agriculture, although it consists in the cultivation of a crop for the maintenance of a particular kind of animal—the silkworm —which, like the cow, is kept for its production of a commodity of exchangeable value.

To restrict Agriculture to its literal meaning—

the cultivation of the soil—would exclude the breeding and rearing of live stock and be regarded in many countries besides Great Britain as indefensible. On the other hand, any other definition must be comprehensive. Agriculture is universal and must be regarded with world-wide vision. Agriculture, by an inclusive definition, is the utilization of the natural fertility of the soil for the production of commodities serviceable to man.

If Agriculture is world-wide, the Economics of Agriculture must be universally applicable. The general principles which it is proposed to consider are not affected by national or climatic boundaries, but it will be convenient to apply them mainly to the conditions of British Agriculture with such reference to other countries as may help understanding.

A PRIMER OF AGRICULTURAL ECONOMICS

PART I

FACTORS OF PRODUCTION

CHAPTER I

LAND

(*a*) Physical Conditions

AS the earth is the "mother of us all," so it is the ultimate source of all material wealth. From the planet on which we live and the atmosphere surrounding it all products are derived. Land, therefore, is a factor of production in all industries. The use of land is also universal. Every human being must have the use of a certain quantity of land unless he could live in the clouds. Even St. Simon Stylites, who tried to sever himself completely from contact with the earth, occupied the land on which his pillar stood.

The purposes for which land is used may be roughly divided into four classes: (1) Residential, (2) Industrial and Commercial, (3) Mining, and (4)

Agricultural. For residential, industrial and commercial purposes the surface only of the land is required. (The sinking of wells for factories or houses is an exception to this general statement.) They need only a certain amount of space which is relatively very small. Mining requires little superficial space, except in a few cases such as the extraction of brick-earth, but it burrows below the surface and removes large quantities of the actual structure of the earth. It may be said not only to use land but to use it up.

The agricultural use of land differs from all other kinds of economic use. It necessitates the exclusive occupation of large areas and the extent of surface required is great in relation to the amount of production. The use is confined to the upper layer of the earth, varying in depth from a few inches to several feet, which is called the soil.

The soil is the most important factor of agricultural production. It is mainly composed of minute fragments of rock. The history of its formation is found in the geological records of the construction of the earth, a process which began many millions of years ago. Geologists tell us that the earth was originally " without form and void," and that in the first stage of creation it was a globe of molten matter which gradually cooled and formed a solid crust. By the action of water and by changes of temperature, which included long periods when ice covered large parts of the globe, as it now covers the polar regions, expansion and contraction of the solid crust

took place and pieces were split off from the rocks. These were washed down, or carried by glacier movement, into the lower levels or valleys, and then became broken up and mixed with the remains of animals and vegetation. The particles of rock collected in a mass were "weathered" by the washing of the rain, the oxidizing action of the atmosphere, and the effect of changing temperature. To these long-continued processes particles of different kinds of rocks offered differing degrees of resistance, the most obstinate being the grains of quartz and the most susceptible the complex combinations of silica and oxides of iron, aluminium, potassium and other metals. Sir John Russell (*The Fertility of the Soil*) thus describes the result:

> If a soil is separated out by mechanical analysis into portions, the particles of which fall within certain definite limits of size, it will be found that the coarsest particles of all—the stones and gravel—represent complex rock material, the coarse particles of the fine earth (the so-called coarse sand, fine sand and silt) are practically pure silica, whilst the finest particles (the clay and to a less extent the fine silt) contain not only silica, but oxides of iron, aluminium and of other metals as well.

The ingredients of the soil derived from rocks are associated with another group of non-organic constituents largely derived from the organisms deposited along with mineral particles when they lay under water. To these constituents is due the presence in soils of chalk and lime which, in the form known to chemists as calcium carbonate, profoundly influence the fertility of the soil.

Another important group of soil ingredients is the so-called organic matter derived from previous generations of plants. As these decay they become incorporated in the soil and contribute the store of energy which they have drawn, while living, from the sun. As they decay and mingle with the other constituents the energy is liberated in the form of heat, with the result that life in the soil becomes possible. As Sir John Russell remarks : " There is no soil without life and no life is possible without stored-up energy."

Some of the inhabitants of the soil, such as earthworms, are visible, but recent investigations have discovered hundreds of different kinds of creatures which are only revealed by the microscope. Their number is almost inconceivable—many millions being contained in a teaspoonful of soil. Patient research is gradually disclosing the varied functions of these hidden organisms, but it is already evident that some of them " play a controlling part in soil fertility."

The story of the gradual development of the soil from barren and lifeless rock to a substance teeming with life shows that the fertility of the land is the result of infinitely prolonged and intricate processes. This intangible force which, like all life-impulses, remains fundamentally a mystery, is the economic basis of Agriculture. The soil is the complex material which contains the power of producing vegetation. In the language of farming it possesses inherent natural fertility.

When, therefore, we speak of the agricultural use of the land we mean the utilization of the inherent fertility of the soil which is a gift of Nature, like air and water, and is not produced by human effort. Generally speaking, all soils will produce vegetation without the aid of man, and the agriculturist merely substitutes a "crop" for weeds. The distinction between a crop and weeds is economic. A crop is any kind of plant which is useful to man, and weeds are plants which have no economic value. The distinction is arbitrary and is drawn by man. In the course of the centuries mankind collectively have adopted certain kinds of plants as food in preference to others. There is no reason why men should not eat grass like Nebuchadnezzar, but they have preferred to eat wheat and rye, which indeed are botanically varieties of grass. At a later stage in history crops such as cotton and flax were adopted for the production of clothing in preference to the fig-leaves which were fashionable in the Garden of Eden. The selection of the crops included in the scope of Agriculture is, therefore, determined by the demand for them.

The fertility of land, which is the gift of Nature, may be greatly stimulated and increased by man. A measure of the extent to which this is possible is provided at various Agricultural Research stations throughout the world, of which Rothamsted is the oldest and most famous. At Rothamsted wheat has been grown on the same plot for over eighty years without the application of any fertilizer. Its annual

yield, which is the production of the natural fertility of the soil, is more than trebled on the plots to which fertilizers have been applied. By the same experiments it is shown that the extent to which the natural fertility may be stimulated is under the control, within certain limits, of the agriculturist. The art of farming consists in the judicious use of this power of control which has been placed in the hands of farmers partly as the result of centuries of experience, and partly as the result of scientific investigation into the composition and capabilities of various soils.

The farmer is often described as a producer of crops. In fact he is never more than a part-producer. He is in co-operation with Nature, and only to the extent to which he assists and supplements Nature does he produce crops.

Land is sometimes loosely spoken of as the farmer's raw material. More accurately it might be said that the fertility of the land is his raw material, the supply of which he can, in some degree, control. But his use of this raw material differs from the use of raw material in industry. Manufacture uses up raw material in the process of transforming it into commodities. But the farmer does not need to use up the fertility of the soil in producing crops. He borrows it one year and returns it the next, and even if he does not return it he cannot wholly exhaust the supply.

No soil capable of cultivation can be completely denuded of its natural fertility. If it is abandoned

as unproductive it will still produce some kind of growth, and if left alone for a long period Nature will gradually restore the fertility of which man has robbed it. But the natural fertility of soils may be steadily reduced by continuous cultivation without compensatory return. This was done in the early days of British Agriculture under the common-field system of arable farming, and although precise data are lacking, there is evidence that the average yield per acre of corn fell by probably three or four bushels from the eleventh to the sixteenth century. The cause in that case was mainly ignorance, but was partly attributable to the absence, under the common-field system, of sufficient incentive to individual enterprise. It is also done not by ignorance but design under modern conditions in newly-developed countries. In Canada, for example, the pioneer farmers, entering into possession of immense tracts of land the soil of which was of great depth and high productivity, found it profitable to draw upon the accumulated store of fertility.

In a report on the Economic Resources of Canada issued by the English Ministry of Agriculture in 1925 it was stated : " There is little evidence that up to the present time the using up of the stores of nitrogen in the soil had generally affected the average yield of the crops, and it is not surprising that wheat-growers should regard the store of fertility as inexhaustible. There is plenty of land to-day which, after being under cultivation for a quarter of a century without any attempt to restore

to it a fraction of the constituents removed by the crops, is still very rich and probably yields as much produce as it did at the outset. But analysis shows that it has lost nearly one-third of its original stock of nitrogen." In an official report on an Agricultural Survey of Manitoba—the oldest of the "Prairie Provinces"—it is stated that: "In a generation more than one quarter of the potential wealth of the surface soil has disappeared." A third cause of the depletion of soil fertility is to be found in the neglect or incompetence of the occupiers, of which instances are apparent in every country.

Next to soil as a decisive factor of production is climate. About one-tenth of the total surface of the earth lies in the Polar Regions where no vegetation is possible except in a few spots. In the tropics, on the other hand, vegetation grows in lavish abundance. Between the extremes of heat and cold lie the regions in which what may be termed ordinary Agriculture is carried on and most of the crops which contribute to the support of man are produced. The staple foods—i.e. those which chiefly form the "staff of life" to the various races of humanity—are wheat, rye, rice, maize and millet. All these crops will endure a wide range of climatic conditions, although wheat and rye will flourish nearer the Polar Regions than the other three. Climate, therefore, determines the distribution of crops over most areas and sets broad limits to their cultivation. But its influence is also local in those

countries where varying climatic conditions prevail. Great Britain is a notable instance of this. In no other territory of equal size are the climatic conditions so varied. The difference between the east and west of England in the average rainfall is sufficient to establish a marked difference in the farming systems of the two sides of the country.

The agricultural use of a tract of land includes the use of the air, sunshine and rain which are apportioned to it by Nature. They are beyond the control of the agriculturist, although in some districts they may be affected by human agency. The air may be polluted, the sky be veiled by smoke and vapour emanating from industrial operations. The amount of rainfall may also be influenced by afforestation.

The physical conditions, therefore, which determine generally the kind, and, in a large degree, the quantity, of crops which can be grown and the character of the farming which can be conducted on a particular tract of land, are soil and climate, including under the term climate, situation (whether upland or lowland), aspect (if the land is sloping) and water supply.

(*b*) Tenure

The agricultural use of land must be a monopoly. The monopoly may be held by one person individually or by a number of persons collectively, but the farm must be under monopolistic control. Farming is an orderly process which has to be arranged long

in advance. The kind of crop to be grown is decided for each part of the farm, and the decision once arrived at cannot be altered if the harvest is to be gathered. Divided control, or the admission of the right of outsiders to interfere with the arranged process, would lead to the position described in the parable where the husbandman sowed wheat and another sowed tares.

The right to the exclusive possession or occupation of land has been, through all ages of human history of which we have knowledge, the cause of strife. As soon as we find records of the activities of mankind in organized communities or nations we find evidence of migrations, most of which were inspired by a desire to possess land already occupied by other people. These migrations were usually resisted, and the nation which proved itself the stronger took forcible possession of the territory of the conquered enemy.

Two familiar instances which are well within the scope of recorded history may be taken as examples.

When William of Normandy in 1066 invaded England and defeated and killed King Harold at the Battle of Hastings, he took possession of the country by right of conquest and claimed to be absolute owner of all the land therein. All prior rights of ownership were swept away and the King became the sole and universal landowner. The whole land, in legal language, was vested in the Crown. The King at once made grants of land to a large number of persons, the majority being those

who had accompanied him in his invasion and fought in his cause, although in a few cases he confirmed existing owners of land in their property. In all cases certain conditions were attached to the grant.

The ownership conferred on the individual to whom a grant of land was made was conditional and recognized the over-lordship—or ultimate ownership—of the King. So long as the conditions—which usually included an obligation to render service of some sort to the King, and in some cases imposed the duty of maintaining roads and bridges—were complied with, the individual to whom the grant was made was empowered to exercise all the rights and privileges of ownership and transmit the property on his death to his heirs. If at his death there were no rightful claimants to the estate it reverted to the Crown as original owner and over-lord.

When North America was invaded by Europeans, early in the seventeenth century, with the object of settlement, they found no organized government claiming possession of the whole country as did William the Conqueror. A roving population of Indians, divided into many warring tribes or nations, sparsely occupied a vast territory. They resented the intrusions of strangers, not because there was not ample room for them but because they infringed their rights of possession. The invading settlers recognized the prior right and, where possible, tried to negotiate for the land they coveted. When negotiation failed force decided, and in the result the American and Canadian peoples possess their

country mainly by the same right as that by which the Normans possessed England—the right of conquerors. Personal rights of ownership arose in the first instance by recognition of the claim of those who by their own exertion cleared the ground and cultivated it. It has been said that a natural right of property is created by the man who first "mingles his labour with the soil." This is the right of the pioneer. But as the people became organized the over-lordship of the whole land was claimed by the State. Tracts of land were sold by the Government, which imposed certain conditions on the owners, but ultimate ownership of the whole country and of any part of it by the nation is laid down in the doctrine of "eminent domain" as it is termed, or in other words, the assertion of the right of the State as paramount landlord.

The development of the land system of the United States is of special interest to the student. The early settlers were hampered by no existing laws or traditions. They were free to set up any system which they thought best. The birth of the United States is so commonly attributed to the Pilgrim Fathers, who landed in New England in 1620, that the earlier settlement in Virginia is sometimes forgotten. There was an important difference in the status of the two bands of settlers. The Virginian settlement was exclusively English and the pioneers were armed with the authority of the Crown authorizing them to grant patents subletting portions of land to intending colonists under conditions to be

agreed upon between themselves. Under the influence of the English feudal system the general method adopted was to make direct grants to individuals. The Pilgrim Fathers took with them not only English, but also Dutch traditions. In New England the usual method was to make a grant of land to a group of persons who wished to found a settlement or town. "The earlier towns," writes an American economist, "were practically settled as church communities, that is to say the formation of a town amounted practically to the organization of a church congregation, and their settling upon a tract of land and calling it a town. When a town was settled all members who were admitted to settlement were given grants of land."

In New York under English domination the land system resembled that of New England, but, under the Dutch, a system, known as the "patroon" system, was developed. By this system large tracts of land ranging from 50,000 to 100,000 acres were granted to individuals known as patroons. They were expected to attract immigrants to settle on their estates and were authorized to rule over them as hereditary magistrates, receiving the rents, out of which they were expected to support churches, schools and other public institutions. This was in fact a form of feudalism adapted to a new country. In Pennsylvania and Maryland large tracts of land were granted to proprietors, who in turn sold to the actual cultivators.

After 1776 the various systems were gradually

co-ordinated in a national policy. The ownership of the land of each State was then regarded as vested in the State Government, but by a series of enactments the greater part of the unoccupied or unsold lands were ceded to the Central or Federal Government, which then began to devise plans for their sale to individuals. The policy was governed largely by considerations of national finance, the proceeds of the sale of land being devoted to payment of the national debt. Before 1800 public land was sold only in tracts of not less than 640 acres ; from 1800 to 1821 the smallest tract sold was 160 acres, and the lowest price 2 dollars per acre. During the next twenty years the minimum price was 1·25 dollars per acre, and the smallest tract sold was 40 acres. In 1841 a general pre-emption Act was passed, by which the public domain was reserved for sale to actual settlers. These were allowed to buy limited areas, on which they had actually settled, at the fixed minimum price of 1·25 dollars per acre. The final stage in the transition was reached with the passage of the Homestead Act in 1862 and its modification in 1864. Under this law the actual settler who lived on and cultivated the land was freely given a tract not exceeding 160 acres. Further Acts in pursuance of the same policy have been passed, and generally it may be said that the basis of the present American land system is occupying-ownership. In an article prepared by the Bureau of Economics of the United States Department of Agriculture it is stated that " farm-owner-

ship by the farmer has come to be regarded as normal and tenancy as abnormal." It is added that land is in all cases "held subject to the paramount authority of the State."

The principle of the ownership by the nation collectively of the whole of the land within its boundaries is at the basis of all tenure, but it has little, if any, economic significance. Ownership of land implies its exclusive possession subject, so far as the State is concerned, only to such conditions and qualifications as are embodied in legal enactments, and to the liability, like other forms of property, to such charges as may be levied for public services. Ownership usually, unless expressly limited by law, includes the right of letting to other persons.

The use of agricultural land is exercised by its owner or by others—commonly called tenants—to whom the right to use it, for a longer or shorter term, is granted by the owner on arranged terms. Systems of land tenure as they affect the agriculturist fall, consequently, into two main classes—ownership and tenancy.

Occupying-ownership or owner-occupation prevails over a large part of the world in varying forms. It includes very diverse types of land-users, from the Indian ryot with his tiny plot, to the Australian pastoralist or the American rancher with his thousands of acres.

Ownership generally implies economic freedom. The farmer who owns his farm is subject to no

restriction in the use of the land. He can devote his energy and skill to secure the greatest possible production with the assurance that the result of his efforts will be for his own exclusive benefit. Working with this incentive he may be expected to make the most of the land and obtain the largest return of which it is capable.

In theory this appears self-evident, but in practice these consequences of ownership are not always apparent. The statement that the man who owns his farm will secure greater production from a given area than the man who rents it appears so reasonable that its truth is taken for granted. Arthur Young's famous dictum that the "magic of property turns sand into gold" is accepted as evidence, and the real question at issue—the relative results of ownership and tenancy—is begged.

No conclusive answer to the question can be given because no systematic comparison has been made on a sufficiently wide scale. Casual observation suggests that peasant proprietorship, which prevails very largely on the Continent, does not always result in high productivity. In Great Britain there are many instances of adjacent farms one of which is farmed by the owner and the other by a tenant. But there is no marked difference in their respective outputs, indeed the difference if it exists is frequently in favour of the tenant-farmer.

The Bureau of Agricultural Economics of the United States Department made an exhaustive inquiry by means of a series of surveys into farm-

ownership and tenancy in that country, and discussed the question of "the relation of types of tenure to efficiency in farm operations" (*Agriculture Year Book*, 1923). They took as tests of relative efficiency: (*a*) live stock, (*b*) diversification of crops, (*c*) yield per acre, and (*d*) farm income. Shortly summarized the conclusions reached were:

(*a*) "Live stock is a smaller factor in the organization of tenant-farms than in that of farms operated by owners," but "in some of the districts surveyed the proportion of total farm capital invested in live stock other than work-animals is larger for the tenant-farms, or at least for certain classes of tenant-farms than for farms operated by owners. . . . The fact that men rent land instead of owning it is not in itself a fundamental reason why they cannot engage extensively in live stock husbandry."

(*b*) "It is frequently assumed that tenant-farming results in less diversification of crops than does farming by owners. Averages for the United States as a whole or for particular sections appear to sustain such a conclusion. However, this is largely due to the fact that tenant-farms predominate in regions where the so-called one-crop system of farming prevails and to the tendency on Southern plantations to work the cotton or tobacco land by means of croppers and tenants. In the general farming regions of the North, local surveys do not indicate that tenant-farmers uniformly practise less crop diversification than is practised by owner-farmers in the same localities."

(*c*) "Comparisons of yield per acre for a number of surveys do not point to definite conclusions. In some surveys tenant-farms show higher average yield, while in other surveys the advantage is with owner-farmers. In short it appears that the question whether tenants or owner-farmers are the more efficient as measured by crop-production per acre cannot be conclusively answered except with reference to the particular locality under consideration."

(*d*) "The relative efficiency of the several classes of farmers may also be compared in terms of ability to make the farm yield farm income, that is net income for the business as a whole without reference to its distribution in the form of rent and interest among the several classes who furnish the farm capital or in the form of wages for the farmer's time. . . . The results of the surveys . . . indicate that in the Northern areas tenants are not notably inferior to owner-farmers in their ability to make their farms yield farm income, and in a number of surveys are shown to be slightly superior. In the Southern surveys tenants earned larger average incomes than did owner-farmers employing croppers, and share or share-cash tenants earned farm incomes approximately equal to or exceeding those of owner-farmers operating without croppers."

The general conclusion arrived at as the result of the whole investigation was thus stated:

"The available statistics indicate that efficiency is less a matter of the class of tenure than it is of the

personal qualities of the farmer, the character of the land, and the adequacy of farm equipment and operating capital."

There are many forms of tenancy of agricultural land and there is hardly any form by which land can be let by one man for use by another which has not been tried at some time or in some part of England. Under the Manorial system, at first the lord provided not only the land, but also the live stock and equipment. This was a form of the metayer system which now prevails widely in parts of Europe. Metayage is generally the association of capital and labour by the combination of the proprietor, who contributes his capital represented by the land, buildings, live stock, implements, fodder and cash, with the farmer who gives his labour. The association is co-operative, but the landowner is the predominant partner in the joint business. He has the general management of the farm, regulates the rotation of crops, selects and buys manure, controls the live stock and realizes the produce. Under the Manorial system the occupier was entitled to the whole produce of the land and the lord of the manor took his share mainly in labour, though frequently he also received a part of the produce. The practice of letting the land on lease, sometimes with and sometimes without the stock, gradually arose.

The rent was a fixed payment, often wholly or largely in produce, although in course of time money-rents replaced the produce-rents. The following

were the yearly payments made by the tenant to the lord in a lease of 1562 :

			£	*s.*	*d.*
10 quarters of corn (wheat)	per bushel	12*d.*	4	0	0
20 „ „ barley	„	8*d.*	5	6	8
10 „ „ oats	„	4*d.*	1	6	8
20 capons	„ caput	4*d.*	0	6	8
20 pigeons	„	4*d.*	0	6	8
12 great fish called trout	„	3*d.*	0	3	0

In a stock and land lease given by the Abbot of Bath in 1528 the land and buildings and the flock of 360 wether sheep were let to William Cole, his wife and son, for the term of the life of the last survivor. The yearly rent was 15 quarters of wheat, 22 quarters of barley, 4 loads of wood, and £6—the last-named payment being specified as the rent of the flock.

By the middle of the sixteenth century the practice of letting land on lease had extended so that in many parts of the country half the land was so let. By that time money-rents were the general rule. The term was sometimes for life or for lives, but more usually for a fixed term of years.

As the letting of land on a commercial basis, which became established in the sixteenth century, gradually extended into a general system, farms were rented by men of capital who provided their own stock and implements, the owner providing the land, the house and the necessary buildings. The terms on which the farm was let were set out minutely in the lease, the landlord binding the

tenant by strict conditions or covenants of a very detailed character. The principle underlying these conditions was to ensure that the tenant should not be able, during his tenancy, to reduce the fertility of the land. It was not until the latter end of the eighteenth century that what was then termed the "new farming" was widely introduced, and the ideas of mediæval agriculture were abandoned or, at any rate, greatly modified. In place of the three-course system, which had prevailed from time immemorial, the four-course system was adopted and rapidly spread. It was made possible by the appreciation of the merits of turnips or swedes as a farm crop, and by the recognition of the fact that the fertility of the land could be maintained by the judicious rotation of crops—the exhausting corn crops alternating with the recuperating crops of roots or "seeds"—without the "rest" by a fallow every third year which was formerly regarded as essential.

The practical application of these new principles of farming was largely due to the enlightened enterprise of a few owners of large agricultural estates —the most famous being Mr. Coke, of Holkham, Norfolk, who, succeeding to his property in 1776 at the age of twenty-two, determined to farm a part of his estate himself. The soil was thin, sandy and almost barren, and no attempt had been made to render it productive, the chief crop grown being rye. Coke marled and clayed the land, bought large quantities of manure, adopted the four-course

rotation, grew wheat, turnips, sainfoin and clover, and greatly increased the live stock. He developed the practice—still characteristic of Norfolk—of stall-feeding cattle in winter, whereby not only was beef produced for the London market, but the use of oil-cake and other nutritious food resulted in rich manure which improved the land and produced heavy crops. After some years of experimental farming Coke began to impress the lessons he had learnt on his tenants. He thoroughly equipped his farms with houses, buildings and cottages at a total cost of about £500,000. He offered his tenants leases of twenty-one years, thus giving improving farmers security that they would reap the reward of their enterprise, while he also inserted in the leases conditions which enjoined the adoption of approved methods of cultivation. Two years before the termination of the lease the tenant was offered a renewal at a new rent.

The result of this enterprise was to establish the landlord and tenant system on a modern basis. Its success on the Holkham estate was evident. From the landlord's point of view the property was vastly improved and its rental value was increased in forty years from £2,000 to £20,000 per annum. The tenants flourished also, and the best farmers competed for the farms when they were vacant, while the land was turned from an almost barren heath to one of the most productive tracts in the country. Other far-seeing land-owners in many parts of England adopted similar methods, and the founda-

tions were laid on which was built the structure of English farming, which, throughout the nineteenth century, was eulogized by economists and agriculturists from many countries, and set, in many respects, an example to the world.

The system of long leases depended for its success on the recognition both by landlords and tenants of mutuality of interest. So long as landlord and tenant were alike animated by the desire to deal fairly and equitably, each respecting the other's rights, both alike profited. The tenant, having security of tenure for a long period, was able to sink capital on the holding with the assurance that he would reap a substantial reward by his enterprise and that the rent would remain unaltered until the end of the lease. The landlord was secure of his rent for the period, and at the end of the lease would find the farm improved and would be able to increase the rent to the next tenant.

For a considerable period the practice of letting farms on lease for a term of years was general. The term varied, but was usually seven, fourteen, or twenty-one years. During the period of depression following the Napoleonic wars, the leasing system fell into some disfavour, but it continued to prevail widely throughout the nineteenth century until about 1880. Since then, although it is still common in Scotland, it is rarely adopted in England and Wales, where yearly tenancies have now become almost universal.

The system of land-tenancy as developed from

the Manorial system perpetuated the theory of the dependence of the tenant on the will of the lord. The change from a servile to a commercial basis of the relationship of landlord and tenant established freedom of contract, and theoretically a man could only be bound by conditions to which he had voluntarily agreed. In practice, however, the conditions on which farms could be rented were arbitrary. What were regarded as the principles of good estate management, laid down by lawyers and stewards with the object of safeguarding the interests of landowners, which included the maintenance of the fertility of the soil, were adopted generally, and no farm could be obtained on any other terms.

A wise and far-seeing landlord exercised his powers with discretion and did not enforce them harshly on competent and enterprising tenants. But all landlords were not wise, and some exercised their legal rights without scruple. If all the conditions were rigidly imposed there was no inducement to a farmer to improve the farm, even if he had the skill to do it, for he had no guarantee that he would reap the benefit of his enterprise. The question of the equitable claim of a tenant to the improvements he had made naturally arose as soon as the practice of letting farms became general. By law he had no claim. The legal maxim was *quicquid implantatur solo, solo cedit.* Whatever was attached to the land became part of the land and the property of the landowner.

In 1875 the rights of tenants first received statutory recognition in the Agricultural Holdings Act of that year. This, speaking generally, embodied in statutory form and made generally applicable the custom of the country prevailing in those counties —especially Lincolnshire—where it was most favourable to the tenant. The Act, however, was not compulsory, i.e. an agreement might be made that it should not apply. In 1883 another Act was passed on compulsory lines, i.e. no agreement was valid unless it either embodied the conditions of the Act or provided for compensation to the tenant on equally liberal terms. Further Acts were passed in 1890, 1895, 1900 and 1906, and in 1908 all the enactments then dealing with the subject were consolidated in the Agricultural Holdings Act of that year. Further Acts have been passed (1917, 1920, 1923) extending the provisions for the protection of the tenant. This legislation gives the tenant of any agricultural holding the right, on quitting his farm, to obtain compensation for improvements made by him during his tenancy. For structural works of a permanent nature which substantially alter the character of the farm, the consent of the landlord is required.

The provision of all equipment of a permanent nature, such as the erection or enlargement of buildings, structural repairs, fencing and draining, in fact the complete outfit of the holding for the class of farming for which it is intended to be used, is regarded as the obligation of the landlord. Improvements which in their nature are not permanent may

be undertaken by the tenant, and the law establishes his right to receive compensation for such part of their value as he leaves in the farm when his tenancy terminates. These include chalking, claying, liming and marling the land, application of purchased manures, consumption on the holding of corn, cake and other feeding-stuffs.

In addition to these provisions for compensation for improvements the Acts provide for the payment by the landlord to the tenant of compensation for injury done to his crops by game. Two principles which have evoked considerable discussion were introduced into English law for the first time in 1906, and have been confirmed and extended by subsequent Acts. One is "fixity of tenure" and the other is "freedom of cultivation."

The claim of tenants to "fixity of tenure," in other words to be protected by law against unreasonable or capricious eviction, had long been pressed. It met with determined opposition as involving illegitimate interference with the rights of property and unwarrantable limitation of the control of the land by its owner. Ultimately, however, the interests of the tenant prevailed, and the Agricultural Holdings Act of 1920 contained provisions for compensating the tenant if his tenancy is terminated except for certain specific causes. These provisions do not, in terms, give fixity of tenure, but they are designed to penalize the landlord if he evicts a competent and solvent tenant.

The landlord may at any time apply to the

Agricultural Committee for the area in which the holding is situated for a certificate that the tenant is not cultivating the holding according to the rules of good husbandry. The Committee has to give both landlord and tenant the opportunity of being heard, and must grant or refuse the application within a month. Either the landlord or tenant, if he does not accept the decision of the Agricultural Committee, may require that the question as to whether the holding is being cultivated in accordance with the rules of good husbandry be referred to an independent arbitrator, whose decision is final.

The tenant has a right to demand that the question of the amount of rent to be paid in future shall be referred to arbitration, and if the landlord refuses, the tenant, if he quits the holding for that reason, is entitled to compensation.

The principle of freedom of cultivation was novel in law, although in practice landowners had in many cases given tenants considerable liberty of action. Leases and agreements bound the tenant to practise a certain rotation of cropping, and if it was not actually specified, the custom of the country might be invoked by the landlord to prevent the tenant from departing from the recognized rules of good husbandry as practised in the district. These restrictions were frequently not enforced where the landlord was satisfied that the tenant was dealing fairly by the land and not unduly exhausting it. They were in fact based on the theories which were sound enough before the days of scientific agriculture

and the knowledge of the principles by which fertility may be maintained by the proper use of fertilizers. Fifty or sixty years ago two white straw crops, i.e. wheat, barley, oats or rye, in succession, or the selling of straw, were regarded by most farmers as indefensible, and they would see nothing harsh or unreasonable in being forbidden to do what all good farmers would consider almost immoral. These restrictions had gradually fallen into disuse, but they still remained generally in potential operation until the passing of the Agricultural Holdings Act of 1906, when a legal right to freedom of cropping and of disposal of produce was given, subject to the proviso that suitable and adequate provision was made to protect the holding from injury or deterioration. If a tenant exercises his rights so as to injure or deteriorate the holding the landlord can recover damages, or if necessary obtain an injunction to prevent the tenant from doing so.

By the same Act it is provided that if a tenant, on quitting his holding, is proved to have deteriorated its value by failure to cultivate according to the rules of good husbandry or the terms of his contract the landlord is entitled to compensation.

The phrase " cultivating in accordance with the rules of good husbandry " or " consistent with good husbandry " recurs frequently in recent legislation affecting the tenure of agricultural land. The term is of ancient origin and stipulations as to conforming with the rules of good husbandry were common in

old leases and agreements. Indeed, apart from explicit conditions, conformity with the rules of good husbandry was obligatory, under the Common Law, on any tenant. There was no definition of the term, and in cases of dispute the rules of good husbandry applicable in a particular case were proved by the evidence of experienced persons familiar with the farming practice of the district in which the farm was situated.

In the Agriculture Act, 1920, a legal definition is given to the term as follows:

"The expression 'rules of good husbandry' means (due regard being had to the character of the holding) so far as is practicable having regard to its character and position:

"(*a*) the maintenance of the land (whether arable, meadow or pasture), clean and in a good state of cultivation and fertility, and in good condition; and

"(*b*) the maintenance and clearing of drains, embankments, and ditches; and

"(*c*) the maintenance and proper repair of fences, stone walls, gates and hedges; and

"(*d*) the execution of repairs to buildings, being repairs which are necessary for the proper cultivation and working of the land on which they are to be executed; and

"(*e*) such rules of good husbandry as are generally recognized as applying to holdings of the same character and in the same neighbourhood as the holding in respect of which the expression is to be applied."

The tenant of a farm in England, therefore, is now placed by law in the position of being, while the tenancy lasts, in almost complete control of the use of the land he rents and of being able to apply his capital and energy to it with confidence and security.

The landlord's control has been diminished so that he is now left with little more than the power of choosing a tenant and (subject to the legal conditions) of evicting him.

The economic basis of the system remains unchanged. The landlord provides the land, with all the necessary fixed equipment, including house and buildings, in return for an agreed rent in money. He also pays any land tax and tithe chargeable on the land. The tenant provides all working capital, including live stock and moveable equipment such as implements and machinery, and pays all local rates.

There are many forms of tenancy in other countries. On the Continent they are mostly variations of the Metayer system previously mentioned (page 33).

In the United States farm-tenancy is commonly on a " share " basis. " In forty of the forty-eight States," says a high authority, " the share tenants on farms outnumbered the cash tenants."

The different classes of tenants in the United States are thus defined in the Report on the Census of 1900 :

" *Farm tenants* are farmers who, as tenants, renters, or croppers, operate hired land only.

They were reported in 1920 in five classes :

" (1) Share tenants—those who pay a certain share of the products, as one-half, one-third, or one-quarter, for the use of the farm but furnish their own equipment and animals.

" (2) Cropper-share tenants who do not furnish their work-animals.

"(3) Share-cash tenants—those who pay a share of the products for part of the land rented by them and cash for part.

"(4) Cash tenants—those who pay a cash rental, as 7 dollars per acre of crop land or 500 dollars for the use of the whole farm.

"(5) Standing renters—those who pay a stated amount of farm products for the use of the farm, as 3 bales of cotton, or 500 bushels of corn."

Just as it is difficult to assert dogmatically that ownership is always more advantageous, or results in greater output or profit, than tenancy, so it is impossible to say that one form of tenancy is in all cases superior to another. Cash tenants, to use the American term, have the most freedom of action, the greatest responsibility, and the greatest risk. Under share tenancy the landlord usually provides not only the land and its fixed equipment, but also some part of the working capital such as the live stock. The rent paid by the tenant is not fixed in amount, but if paid partly or wholly in kind, varies according to the quantity of produce from the land. Thus while the loss by a bad season is lessened the tenant has to share the gain of a good season. The incentive to exertion being thus reduced, the tendency is to diminish output.

The effect of terms of tenancy on the tenant is more psychological than strictly economic. The reaction is personal. A man of ability, enterprise and energy will succeed under hampering conditions of tenancy, while one who is unintelligent and lazy will fail under the most favourable conditions.

These qualities are, in a large degree, racial. Some nations are thrifty and industrious, others are careless and indolent. The possession or the lack of these qualities has a greater influence on production and profit than forms of tenure.

(*c*) Size and Character of Holdings

The term "holding" has come into general use in Great Britain of late years to describe any definite tract of land occupied for agricultural purposes. It came into agricultural terminology by way of the law. As all land is in legal phraseology "held" on some form of tenure by the person who has the control or use of it, a farm is described as an "agricultural holding" in Acts of Parliament and other official documents.

It may be noted that the words "farm" and "farmer" in the sense we now use them, were introduced into the English language about four hundred years ago. They are the terms commonly used among English-speaking people to denote a unit of land used for ordinary agricultural purposes and the person who so uses it. Other terms are employed for tracts of land and for specialized forms of agricultural enterprise, as, for example, "ranch" or "range" for stock-keeping on a large scale and "plantation" for cotton-growing.

The size of a "holding"—to adopt the most convenient and comprehensive term—may vary from the smallest patch of ground on which crops can be grown to an area covering many miles.

In every country in which agriculture is practised holdings of various sizes are to be found, but the average or predominant size—what may be termed the "typical" farm—differs greatly. Thus of the 190,000 farms in Denmark nearly 97 per cent are less than 150 acres in extent, and of these more than half do not exceed 25 acres. In Canada, on the other hand, three-fifths of the farms are over 100 acres and only 18 per cent are less than 50 acres in size.

In England and Wales the distribution of agricultural holdings according to size was, in 1926, as follows:

	No.	Per cent of Total.
Above 1 and not above 5 acres	74,185	18·4
„ 5 „ „ 20 „	108,814	27·1
„ 20 „ „ 50 „	78,827	19·6
„ 50 „ „ 100 „	61,063	15·2
„ 100 „ „ 150 „	31,796	7·9
„ 150 „ „ 300 „	35,373	8·7
„ 300 acres	12,580	3·1
Total . . .	402,638	100·0

These proportions vary in different parts of the country. Thus in the East Riding 23 per cent, and in Essex 20 per cent of the farms are over 150 acres in extent, while in Cornwall only 6 per cent, and in Lancashire less than 4 per cent are of so large a size.

It has become usual to describe all farms of less

than 50 acres as "small holdings." "Allotment" is another term used in England to describe small parcels of land. This term had its origin in the proceedings for Enclosure, when it was the usual practice to "allot" pieces of land to claimants of rights of common as compensation for the abolition of their rights. It is now usually applied to any piece of cultivated land not exceeding one acre in extent and not attached to a residence.

Another class of statutory holdings has been recently introduced termed in the Act a "cottage garden," which is defined as "a dwelling-house together with not less than forty perches and not more than three acres of agricultural land which can be cultivated by the occupier of the dwelling-house and his family."

Legal definitions and arbitrary size-limits have no relation—or at most a very rough relation—to economic facts. Holdings of agricultural land properly fall into three classes as economic units, viz.:

1. Those which are cultivated personally by persons whose livelihood is earned otherwise.

2. Those which are cultivated by the occupier (whether owner or tenant) and his family without help—or with only the occasional help—of hired labour.

3. Those which can only be cultivated with the regular help of hired labour.

In a newly settled country the land can be parcelled out in farms in accordance with a definite scheme or plan which may be devised with reference

to economic, political or sociological considerations. On the vast level plains of North America the State delimited the farm boundaries by the simple method of drawing straight parallel lines on a map which cut up the country into " Sections," each of which comprised 640 acres.

But in a country like England where the development of settled Agriculture has extended over nearly 2,000 years, the size, shape and situation of farms have been affected by various influences.

Although in Saxon, and even Roman, times there were in many districts what we should now term " estates," and village settlements, the systematic allocation of the land may be regarded as dating from the Norman Conquest. The whole country was then parcelled out into " manors " which varied in size and physical characteristics but were all organized on a uniform plan. A manor contained a large common-field cultivated by the manorial tenants collectively but divided into " strips " of about one acre each. There was a meadow, also occupied in common, a " demesne " or farm in the exclusive occupation of the lord of the manor, and all around were wide tracts of waste or woodland. There were also a number of small " crofts " or holdings which in course of time tended to increase both in number and size.

This arrangement of the land continued with little material change until the process of " Enclosure " took place. The process involved the abolition of the common-field, and the collection in " enclosed "

holdings or farms of the scattered strips belonging to each of the tenants. It took place at various times in different counties and districts, beginning in the thirteenth and ending in the nineteenth century.

Many volumes have been written descriptive of the Manorial system and of the chequered and sometimes stormy history of Enclosure. They are briefly referred to here because the framework of the Manor and its subsequent readjustment very largely determined the present size and shape of English farms. Their diversity arises from their history. Another fact which accounts for their irregular boundaries is that they were in many cases laid out after tracks existed across the waste, and of the right to use these ways—which gradually became roads and often followed deviating routes to avoid bogs or other obstacles—the people have always been very tenacious.

In many parts of the country farms still exist as they were formed in this haphazard fashion. The boundary banks and hedgerows of some farms are centuries old and instances may be found of fields which were laid out in their present shape and size before the Conquest.

But although chance may appear to have had a considerable influence, it must not be thought that those who were responsible for laying out what may be termed the original farms were ignorant of the general principles governing the operation. They were guided by the physical conditions of the part of

the country with which they were dealing, and their aim was to adapt the holdings to their environment. It is not by chance that small farms have always been numerous among the hills of Devon and Cornwall and large farms on the levels of East Anglia. Nor is it by chance that the characteristic farm of the Wiltshire or Dorset downs is a parallelogram running from the valley to the top of the downs. Conditions of soil, climate, altitude, contour and water-supply were all taken into account.

The type of farm prevalent in a particular district of an old-settled country such as England was therefore designed long ago as that best suited to the local conditions, and notwithstanding all the improvement in agricultural practice and all the teaching of agricultural science, it remains as a rule, to this day, the most suitable for its situation. In other words the farms were generally arranged on the economic principle of securing the maximum production or profit under the existing conditions in their particular locality.

The industrial revolution, followed by the rapid increase of population and its aggregation in vast masses, the development of the railway system, which not only quickened and cheapened transport but in a large measure changed its routes, the rise in the general standard of living and the extension of the dietary of the people—these were all factors which affected British Agriculture in many ways and introduced new considerations in the determination of the size and character of holdings. Many farms were

absorbed by the towns, and others outside the urban boundaries were wholly changed. Large grass farms suited to their original environment were replaced by smaller holdings devoted to the intensive cultivation of fruit, vegetables, and flowers. Economic considerations outweighed and over-rode physical conditions. Political and sociological considerations have also been introduced and laws have been passed with the object of multiplying small holdings and allotments, an object which, so far as it is attained, necessarily displaces holdings of a different size and character.

In the light of these facts we may now consider the three classes of holdings referred to above (page 48).

Holdings cultivated personally by persons whose livelihood is earned otherwise.—There are a number of holdings coming within this definition which are used by persons engaged in business for the purpose of that business, such as a field occupied by a butcher for the temporary accommodation of stock intended for slaughter. But ignoring such special cases the class consists of what are usually termed "Allotments." The name, as already stated, originated in connection with Enclosure, and the idea was conceived as the result of that proceeding. Many agricultural labourers who before Enclosure had some personal interest in the land, even if it were no more than the use of a common by right or privilege, were, under Enclosure, wholly separated from the soil, and in a large number of cases had not

even gardens attached to their cottages. The "landlessness of the labourer," the "divorce of the peasant from the soil"—to use the phrases current at the time—was accepted as inevitable but was none the less calamitous.

A remedy for this state of affairs was first suggested in 1796 by the then Earl of Winchelsea. He stated that nothing is so beneficial, "both to them and the landowners," as the agricultural labourers having land to be occupied "either for the keeping of cows, or as gardens, according to circumstances." He added that by means of these advantages "the labourers and their families live better and are consequently more fit to endure labour; and it makes them more contented, and gives them a sort of independence which makes them set a higher value on their character." As the keeping of cows was recognized as likely to be a difficulty it was suggested that "where no gardens have been annexed to the cottages it is sufficient to give the ground, and the labourer is sure to know what to do with it and will reap immediate benefit from it. There should be as much as will produce all the garden stuff the family consumes, and enough, with the addition of a little meal, for a pig."

It must be remembered that at that time, and for long afterwards, the large majority of agricultural labourers, although in regular employment at a weekly wage and working long hours, were liable in slack seasons or in bad weather to be suspended, or "stood off" in the common phrase, by their em-

ployers, so that they had a certain amount of enforced leisure. Their wives and daughters also were accustomed to work on the land. It was thus possible for a labourer and his family to cultivate and look after a few acres and one or two cows and pigs without interfering with his ordinary work.

It is to be noted further that although allotments in their inception were advocated on sociological and indeed philanthropic grounds their economic effect was not entirely overlooked. They were intended to provide the means by which the labourers could "live better" and be "more fit to endure labour." In other words they were to supplement wages and increase physical efficiency. At that time the ordinary cash wage was about 8*s*. per week.

From that time onwards landowners in many parts of the country began to encourage the provision of allotments, which gradually came to mean plots of ground of usually about a quarter of an acre, but sometimes as large as an acre, partitioned out in some field appropriated for the purpose.

The provision of allotments by private individuals is now supplemented by legislation, which imposes on local authorities the duty of ensuring that no demand for allotments remains unsatisfied. At the end of 1924 there were in England and Wales 1,170,000 allotments covering an area of 168,500 acres. This would make the average size of an allotment about one-seventh of an acre, but a large, though unknown, proportion of the total number are in urban districts

where the average size is smaller than in the country districts.

The occupation of an allotment by a person whose livelihood is not earned by the cultivation of the land may be regarded as a recreation. But a person who earns his living on the land does not cultivate an allotment for personal gratification. He is in much the same position as a carpenter who, after working for wages all the day, does jobs of carpentering in the evening for other people. He does it because he thus supplements his income as a wage-earner. The farm-worker occupies an allotment because he is thereby able to supplement his wages. This may be because his wages are inadequate to support himself and his family in sufficient comfort for his needs. It may even be that without the help of the allotment he and his family would have insufficient food. But whether this is so or not, the economic effect is that the occupation of an allotment enables, and possibly induces, the wage-earner to accept a lower wage than he would, or could, otherwise do.

Holdings cultivated by the Occupier and his Family without hired Labour.—The "family farm," as it is sometimes termed, is by far the most numerous class of agricultural holdings. It includes the multitude of peasant holdings which exist in all old countries. These are mainly what may be termed "subsistence holdings," that is they are cultivated primarily and often exclusively for the purpose of enabling the occupier and his family to live on the

produce. There may be some saleable surplus, but if so, it is incidental and often accidental, as the result of a particularly favourable season, and in any case it is no more than sufficient to purchase such necessaries of life as cannot be produced on the holding.

But the "family farm" group includes also holdings which, although operated without the assistance of hired labour, may be occupied primarily for the purpose of profit.

Some of them are devoted to specialized forms of Agriculture. Many Poultry-farms, Fruit-farms, Bee-farms, Rabbit-farms and (in Canada for example) Fur-farms are "family" holdings, although such forms of Agriculture are also adopted on larger holdings where hired labour is employed.

In England the term "small holding" includes the "family" farm, whether the object of the occupier is mainly subsistence or mainly profit. In the legislation relating to the subject a Small Holding is defined as one which exceeds one acre, but does not exceed 50 acres, or if exceeding 50 acres does not exceed £50 in annual value for the purpose of income tax. The limit of £50 has recently been raised to £100, but the acreage limit is unchanged.

It will be seen from the table on page 47 that 65 per cent of the agricultural holdings in England and Wales are small holdings within the acreage definition of the Acts.

The provision of small holdings, as of allotments, has been stimulated by the Legislature. Local authorities are empowered and enjoined to supply

the demand where it exists and is not satisfied by private enterprise. Under these powers County Councils and Councils of County Boroughs held, at the end of 1924, 440,000 acres, of which about four-fifths were owned and the remainder leased by them. The number of small holdings thus provided was 30,000, being about 11 per cent of the total number in the country.

The "small holding," as the term is legally defined, is not an economic unit. Size in itself, and by itself, is no criterion. Five acres intensively cultivated may be ample to engross the whole energies of a man and two or three sons, while 75 acres of grass-land may not be too much.

Holdings on which Hired Labour is regularly employed.—This group includes all farms above the size-limit of the "family" farm, whatever that indeterminate limit may be. If we take the conventional limit of 50 acres the total number of labour-employing holdings in England and Wales would be about 140,000. In countries of vast areas such as Australia the size of a holding may run to thousands of acres. In England 10,000 acres and even more have been farmed as one holding, but this is very exceptional, and farms of 1,000 acres or over are few. There are indeed less than 13,000 farms in the country which exceed 300 acres. Nevertheless the holding of from 150 to 500 acres may be regarded as the typical farm of British Agriculture, and it is in connection with such "medium sized"

holdings that the problems of agricultural economics chiefly arise.

Some high agricultural authorities are advocates of what is termed "large-scale" or "factory" farms. The arguments in their favour are forcible. In the production of all commodities for which there is a large and constant demand the tendency is to make the fullest possible use of machinery. The profitable use of machinery depends on the relation of its output to its prime cost. If it can be used up to its maximum capacity the maximum profit from its use is obtained. In the case of agricultural machinery and implements it is impossible to use them to their maximum capacity because farming operations, unlike those of manufacture, cannot be continuous but are dependent upon uncontrollable conditions, such as the time of year and the weather. A steam plough, for example, is capable of working every day in the year, but it can only be used on a certain number of days. On a "medium-sized" farm its use is restricted not only by such conditions but also by the limited area on which it can be usefully employed. By extending the area of the holding the farmer has sufficient land to use the plough to its maximum capacity at all times when conditions permit. This applies to the whole mechanical equipment of the farm, though with less force to stationary engines which can supply motive power for various operations, some of which, like chaff-cutting, can be done at all times of the year. Somewhat similar considerations apply to manual as

to mechanical power. With a large staff labour can be more effectively organized and work specialized. Shortly, the advantage of the large-scale farm, as of a large-scale manufactory or shop, is that overhead expenses are charged to a larger output. The chief disadvantage is that the management of the business, however efficient it may be, must in some degree lack the incentive, interest and personal contact possible only on a farm which is not too large for the direct control of all the operations by the employer.

Results on Holdings of Different Size.—Detailed comparisons have been made in Denmark and Switzerland of the average results obtained in 1917–23, on holdings of various sizes. In the following table the Danish figures are summarized :

Size of Holding.	Gross Output per Acre.			Total Capital per Acre.			Gross Output per Man.	No. of Men per 100 Acres.
	£	*s.*	*d.*	£	*s.*	*d.*	£	
Under 25 acres . .	20	1	0	55	10	0	179	11·3
From 25 to 50 acres.	15	4	0	45	18	0	194	7·8
From 50 to 75 acres	15	3	0	46	2	0	216	7·0
From 75 to 100 acres	13	18	0	44	4	0	214	6·5
From 100 to 250 acres	12	8	0	39	18	0	229	5·4
Over 250 acres . .	12	4	0	39	17	0	224	5·4

The Swiss figures relate to groups of still smaller holdings and the particulars are given in a somewhat different form :

Size of Holding.	Output per Acre.			Production Costs per Acre.			Net Balance per Acre.		
	£	s.	d.	£	s.	d.	£	s.	d.
7½ to 12½ acres . .	22	11	7	18	15	1	3	16	6
12½ to 25 acres . .	19	0	3	14	5	6	4	14	9
25 to 37 acres . .	17	17	2	12	8	11	5	8	3
37 to 75 acres . .	16	2	0	11	1	1	5	1	2
Over 75 acres . .	13	17	7	9	11	10	4	5	9

Dr. Ruston, who refers to these results in an article in the *Transactions of the Highland and Agricultural Society*, 1926, tabulates some further Danish returns relating to the year 1921–22 which show the following results:

Size of Holding.	Crop Products per Acre.			Animal Products per Acre.			Total.		
	£	s.	d.	£	s.	d.	£	s.	d.
Under 25 acres .	1	12	0	15	10	0	17	2	0
25 to 50 acres . .	1	4	0	11	6	0	12	10	0
50 to 75 acres . .	2	4	0	10	16	0	13	0	0
75 to 100 acres .	2	6	0	9	8	0	11	14	0
100 to 250 acres .	2	10	0	6	14	0	9	4	0
Over 250 acres .	5	4	0	5	4	0	10	8	0

Another set of figures relating to seventy Yorkshire farms of various sizes shows the average valuation per acre:

Size of Holding.	Live Stock.			Tenant Right.			Produce.			Imple-ments.			Total.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
50–100 acres	14	0	0	2	6	0	1	18	0	5	5	0	23	9	0
100–150 ,,	8	4	0	2	15	0	2	16	0	3	13	0	17	8	0
150–200 ,,	7	0	0	2	15	0	2	15	0	3	10	0	16	0	0
200–250 ,,	8	1	0	3	9	0	1	2	0	2	3	0	14	15	0
250–300 ,,	6	14	0	2	11	0	2	0	0	2	1	0	13	6	0
300–350 ,,	6	2	0	2	18	0	1	8	0	1	16	0	12	4	0

One other set of figures may be cited which throw light on the effect both of the size and character of holdings. They are given in an Essay on the Economics of Production on Grass and Arable Farms, for which the author, Mr. H. J. Vaughan, was awarded the gold medal of the Royal Agricultural Society. The farms investigated fell into three groups, viz.: (1) Arable, (2) Grass, (*a*) Meat production, (*b*) Milk-production; and the comparative results are shown in the table on p. 62.

From these various comparisons the general conclusions which may fairly be drawn are that both the capital invested and the output per acre are larger on the smaller farms, but that expenses per acre are also heavier, while the output per man tends to increase with the size of the holding. A much more detailed analysis, discriminating the character of the holdings and the system of cultivation, would be required for a close examination of the effect of the size of holding on gross and net output, but as a broad generalization it may be stated that the

Group of Holdings.	Average size. Acres.	Acres per Man.	Acres per Horse.	Expenses per Acre.			Production per Acre.			Production per Man.		
				£	s.	d.	£	s.	d.	£	s.	d.
(1) *Arable :*												
Under 100 acres . .	63	22	25	4	8	2	9	11	11	211	2	0
100–300 acres	181	34	33	5	2	6	7	9	4	253	11	0
300–500 acres	352	41	41	4	3	10	6	13	5	266	17	0
Over 500 acres . .	599	47	52	3	13	1	5	11	1	261	1	0
(2*a*) *Meat :*												
Under 100 acres . .	74	60	88	5	15	7	7	12	7	464	3	0
100–300 acres	202	73	78	3	14	11	5	11	10	416	14	0
300–500 acres	354	93	125	4	5	4	5	9	1	507	5	0
Over 500 acres . .	637	121	124	3	11	4	5	15	9	703	6	0
(2*b*) *Milk :*												
Under 100 acres . .	62	35	37	5	4	4	8	12	7	302	13	0
100–300 acres	174	50	62	4	16	0	8	1	3	419	17	0
300–500 acres	358	68	102	3	6	6	6	14	4	456	15	0

amount of manual labour employed per acre varies in inverse ratio to area. The two chief reasons are that intensive cultivation is more common on small than on large holdings, and that on large holdings labour-saving implements and machinery are more largely employed.

CHAPTER II

FARM EQUIPMENT

A HOLDING may have every advantage of soil, climate, tenure and size, but it must be properly equipped as a farm before it can be put to agricultural use.

The equipment of a farm consists of two distinct classes. It is customary in Great Britain to describe them as provided by the landlord and tenant respectively. Under the British landlord and tenant system the landlord usually provides the permanent equipment and the tenant provides the temporary equipment.

But the division of equipment into two classes is not dependent on the system or conditions of tenure. In Ireland under the old land system it was common for the landlord to let the bare land and for the tenant to provide all the equipment. In Canada and the United States land is sold by the State without any equipment. If a farm is owned by the occupier it is evident that the whole cost of equipment comes out of the same pocket; there is no differentiation of the landlord's from the tenant's contribution. Nevertheless the two classes of equipment are essentially different.

Fixed or Permanent Equipment.—The first class of equipment is that which converts a tract of land into a farm or holding prepared, and suitable to be used, for agricultural purposes. It includes buildings, roads, fences, water-supply and drainage. The extent of the equipment depends on the character of the holding and the use to which it is put. A well-known estate agent, Mr. Gilbert Murray, forty years ago, summarized farms from the point of equipment thus :

> On rich grazing ground few buildings and few roads, good fences, drinking-ponds, and occasional drainage may be required, along with the farmhouse and a cottage or two.
>
> Grass-lands devoted to dairy purposes require larger accommodation for cattle and for the dairy itself—buildings, yards, water-supply, etc.—together with houses for the tenant and his labourers. In the case of arable cultivation, again, you require ample buildings for the care of live stock, implements, and produce ; and many cottages in addition to the farm house. There are also fences, roads, and often much drainage needed.

Under the Agricultural Holdings Acts, as already mentioned, compensation is payable by the landlord to a tenant, on quitting the holding, for improvements made by him during his tenancy. For many of these improvements no compensation can be claimed unless the consent of the landlord has first been obtained and an opportunity given him to carry out the improvement himself. Those improvements, which are set out in the Schedule to the Agricultural Holdings Act, 1923, may be regarded as

embodying the present conception of works included in the fixed equipment of a farm. The list, which is as follows, does not include drainage (which is part of the fixed equipment) because under the Act a tenant may execute this work and claim compensation for it without the consent of the landlord, provided he has given notice of his intention:

(1) Erection, alteration or enlargement of buildings.
(2) Formation of silos.
(3) Laying down permanent pasture.
(4) Making and planting of osier beds.
(5) Making of water meadows or works of irrigation.
(6) Making of gardens.
(7) Making or improvement of roads or bridges.
(8) Making or improvement of watercourses, ponds, wells or reservoirs, or works for the application of water-power or for supply of water for agricultural or domestic purposes.
(9) Making and renewal of permanent fences.
(10) Planting of hops.
(11) Planting of orchards or fruit bushes.
(12) Protecting young fruit trees.
(13) Reclaiming of waste land.
(14) Warping or weiring of land.
(15) Embankments and sluices against floods.
(16) Erection of wirework in hop gardens.
(17) Provision of permanent sheep-dipping accommodation.

(18) In the case of arable land the removal of bracken, gorse, tree-roots, boulders or other like obstructions to cultivation.

Moveable or Temporary Equipment.—The moveable equipment of a farm consists of (*a*) motive power, (*b*) implements and machines, (*c*) live stock. Motive power includes any means by which energy is generated for operating the various implements, machines and tools used on the farm. It may be classified under three headings: (*a*) Mechanical, (*b*) Animal, (*c*) Human. Human energy, or manual labour, involves, however, other factors besides mere power, and may be better considered when the general question of Labour on the farm is dealt with (see page 76).

Mechanical motors—in the general sense of the term—may be driven by wind, water, steam, petrol or electricity.

The windmill was at one time as familiar an object in England as it is still in Holland. In England it was used mainly for grinding corn; in Holland it is mainly used in connection with the elaborate system of drainage which is necessitated in that country by the fact that large areas of cultivated land are below the sea level. In England the use of windmills by millers has become rare, but their use—in a less picturesque form—has become common on estates and farms. They are frequently employed for pumping water from wells and they are sometimes used for operating small motors.

The utilization of the fall of water in a running

stream to operate machinery is probably the oldest of all methods of enlisting the resources of Nature to save human labour. The water-wheel, which revolves simply by the weight of water falling upon it, is familiar in all parts of the country, although like the windmill it is now rapidly falling into disuse. The use of water for motive power finds the greatest example in the " harnessing " of Niagara to supply electricity for a vast territory, and another notable instance is found in the utilization of the Victoria Falls—with their still greater volume of water—for a similar purpose. The invention of the turbine has greatly extended the possibility of using water-power in a level country where there are no waterfalls and the streams flow sluggishly.

Steam-power was not applied to Agriculture for many years after it had been used in manufactures and for transport. The first steam plough was patented about the middle of the nineteenth century and cultivation by steam-power was vigorously advocated and widely adopted by progressive agriculturists in the " fifties," although it was regarded with suspicion by the more numerous class who were sceptical of the merits of anything unfamiliar. A famous agricultural writer of those days—Wren Hoskyns—in *The Chronicles of a Clay Farm*, wrote :

> When at some future day, and by some pen not yet out of straight strokes and pothooks, there shall be written for the edification of the next agricultural public, an historical sketch of " the rise and progress of steam cultivation," it is to be feared that some of the reflections will not be of the most complimentary kind to the genius or the faith of the

generation that has embraced nearly in one experience the development of Steam Navigation, of the Railroad system, the Electric Telegraph, and other kindred appliances in the many-pathed field of practical science.

He went on to remark that the application of steam-power to Agriculture was "long regarded rather with the apathy evinced towards the cobweb speculations of dreaming enthusiasm, than dealt with as a practical question by practical minds."

During the past sixty years the "apathetic" generation of farmers has disappeared and the use of steam-power has become general on farms of sufficient size for its economic use. For cultivating the land it is more extensively used in countries of large areas and level plains than in a country such as England where the fields are commonly small and often hilly. The outlay involved makes the purchase of a steam cultivating set possible only on a "large scale" farm with sufficient land to provide scope for its profitable use. On smaller farms it is more usual to hire a set for such period as it is required.

The "portable" steam-engine is part of the equipment of many farms. It can be used as a stationary engine for various operations, such as thrashing, and may also be available for haulage.

The petrol-driven engine is a recent addition to the forms of motor power used in Agriculture. As a "tractor" for field work and haulage it was almost unknown before the war. It was effectively introduced by the Food Production Department in the

course of the administration of the " plough policy " in 1917–18. No less than 4,200 tractors were supplied to farmers to assist in the breaking-up of grassland and the cultivation of the million acres which were added to the existing arable area. Some of those who had experience of it under these conditions found objections to it, but it has become firmly established and to a considerable extent has displaced the steam-engine in agricultural use.

The utilization of electricity for the provision of motive power on the farm is a still more recent innovation. One of its advantages is that it serves the double purpose of providing both power and light. On many farms an electric plant has been installed for lighting purposes only. Where dairy herds are kept the effective lighting of cowsheds is especially necessary, and electricity is superior to any other method by reason of its convenience and cleanliness. In the distribution of electric power from large central stations many other countries are far in advance of Great Britain, but measures have at last been taken which promise to render it available in the rural districts, although the problem of supply to farms on reasonable terms is still unsolved.

The use of mechanical motive power is economical if by its means a given amount of work is done more effectively and at lower cost than by the use of animal or human power. Comparative efficiency is not entirely a question of performing a particular operation better. It may be that the horse-drawn plough prepares the land as effectively as the steam

plough or that tossing hay by manual labour will make it as well as a hay-tedder. It might even be that both operations would be somewhat better done by the more " primitive " method, and still the use of mechanical or horse-power might be more economical. The greater speed at which the operations can be performed may well be, in farm work, the determining factor. Working as the British farmer does in a capricious climate and subject to sudden and unexpected interruption by the weather, the shortening of an operation, such as haymaking, may make a difference of many pounds in the ultimate value of the crop. The element of time and opportunity renders a calculation of the economic advantage of the use of machinery on a purely monetary basis incomplete and indeed illusive. But omitting this consideration, the use of mechanical power is economic if the annual cost of the machine, including payment of instalments of its capital cost and the current rate of interest on it, does not exceed the cost of horse and manual labour which it displaces.

In practice it is, of course, very difficult to make such a calculation in respect of each machine, but if the mechanical equipment of a farm were considered collectively it should be possible to reckon, with approximate accuracy, the saving in animal and human labour which it represents.

If it were possible to make such a comparative calculation for all the farms in the country it would probably be found that the wide-spread adoption

of "labour-saving" machinery and implements during the past half-century or so has not, to use the colloquial expression, "paid." In other words the collective cost of the power which mechanical equipment—or rather that part of it which can be effectively utilized under farming conditions—represents is probably greater than the cost of the horse and man-power which theoretically it has displaced.

Its use, therefore, must be justified by increased efficiency and by greater quickness in doing the work.

In Great Britain and many other countries the horse now represents animal power on the farm, but in the world at large the ox still remains the most commonly used. It is indeed not so long ago that the horse entirely replaced the ox in English farming, and many living persons have seen oxen ploughing within easy distance of London.

In Shakespeare's time oxen were universally employed on English farms, as many references in his plays indicate, but Jethro Tull, "the father of modern husbandry," who wrote little more than a century later, speaks only of horses in his discussion of farming operations. British farmers of the present day take the superiority of the horse for granted and regard the use of oxen as antiquated, but farmers in many other countries are still as confident of the economic advantages of the ox as British farmers formerly were. As recently as 1805 the author of *The Complete Grazier*, which in many subsequent editions has been a standard authority, strongly urged the merits of oxen, and set out "the

comparative expense of keep and general savings" in parallel columns as follows:

1. Oxen are easily supported during the severity of winter on straw, turnips and other vegetables. Besides, as ruminating animals possess stronger digestive organs, everything capable of affording nourishment is extracted from their food.	1. Horses require to be fed with hay, oats, beans, articles which can only be purchased at heavy expense. The digestive powers of a horse are weak, so that, upon an average, two-thirds more are necessary for him than are required by an ox in order to afford the same nourishment.
2. Every day that oxen are employed, they earn more than their keep, while, if properly fed he will require no other care.	2. A horse not only requires more stable attendance than oxen, but also often exhausts the property of little farmers, who exert themselves in order to keep a *fine team.*
3. The gear necessary for a pair of oxen may be procured at a very moderate price.	3. The harness of a team is, in general, an expensive article, especially when the vanity of the owner induces him to have it decorated with paltry brazen ornaments.
4. At the end of five, six, or seven years, during which they will have more than compensated the cost of keeping them, they are in prime order for fattening; and, when fit for sale, produce to their owner a handsome sum, varying indeed according to the state of the	4. Horses become less valuable every year they are kept. They are liable to spasms, farcy, glanders, foundering, cankers and a host of diseases too numerous to be here specified, from all which oxen are exempted (these animals being subject to few dis-

markets, but ultimately bringing him a considerable clear profit. The same event will follow if, through accident, the beast is lamed or rendered unfit for work.

eases, except a scouring, or looseness, that reduces their value) while horses are, by sudden illness or lameness, speedily diminished in value from *forty* to *four* guineas, and at length become food for dogs, their hide only being in any degree serviceable to mankind.

One of the economic reasons for the abandonment of the ox as a beast of burden in Great Britain is its increasing importance as a food-animal. On the Continent, and in other countries, the standard of beef production is not so high. There would be no demand for a working ox of five to seven years old on the British markets to-day, and it is more profitable to feed a steer for a quick return at two or three years old.

Implements and Tools.—When *The Complete Grazier* was written the author described the following as the "implements of husbandry": Wheel carriages (wagons and carts), Chaff-cutters, Ploughs, Scarifiers and hoes, Harrows, Drags, Rollers, Churns. The list to-day would include these and many more then unknown, or (like the Drill) only known to, and used by, a select few. Implements which have been since introduced into the usual equipment of farms include Mowers, Reapers, Self-binding harvesters, Haymakers or Tedders, Disc-harrows, Horse-hoes, Corn and cake-crushers, Manure-distributors, Root-pulpers, Elevators, Baling-presses

and many others, while for dairy farms Separators, Refrigerators, Milking-machines, and a series of appliances for butter- and cheese-making on modern methods have been invented and come into common use.

The implements first used in Agriculture were, no doubt, the spade and the hoe, and the land was cultivated by manual labour directly applied, and unassisted. At an early stage the use of animal power to supplement human labour would naturally be adopted, but the strength of any quadruped can be used, if not exclusively most effectively, by traction. The ox, the horse, or the ass cannot dig; they can only draw. Consequently some form of spade was required which could be operated horizontally and not vertically, and thus the plough was evolved. That it was independently invented in many parts of the world as man ceased to be nomadic and settled in communities is suggested by the large variety of forms which still exist. Even in Great Britain different kinds of plough are favoured in different districts, and the use of an ancient form is often persisted in notwithstanding the invention of a new and more effective type.

The object of all implements and tools is to produce the maximum amount of effective work with the minimum amount of energy. In so far as they achieve this object their use is economical provided the cost is not incommensurate with the result. The inventiveness and enterprise of agricultural engineers have placed at the disposal of farmers a great variety

of mechanical devices. For the most part they are admirably adapted to serve the purpose for which they are designed, but it would not be difficult to quote examples of crude and ill-devised machines and appliances which have been foisted on farmers, and have failed to fulfil the promise of their inventors. It is necessary, therefore, to be satisfied before increasing the so-called " labour-saving " equipment of the farm that there will either be an actual saving of horse or animal labour or an improved efficiency in the operation, which will repay the outlay involved.

CHAPTER III

FARM LABOUR

ON the "family farm," as has been said, the manual labour is supplied by the occupier himself, and the members of his family. If he has no family or it is small, he may at certain seasons and for brief periods employ other labour. If there are other farms of the same class in the neighbourhood there may be an exchange of labour, each man assisting his neighbour from time to time. This, indeed, would be a partial reversion to the old co-operative or communal principle on which the common-fields were cultivated under the Manorial system before Enclosure.

Hired labour on the land in England may be said to have had its origin in the cultivation of the desmesne of the lord of the manor when it was laid out as an independent and detached farm apart from the common-field. The labour thus rendered was compulsory, and was of two classes. There were the serfs, whose whole labour was the property of the lord to be disposed of at his will and pleasure. They had no claim to remuneration, and no legal rights, but in many cases they were accorded certain privileges, such as the occupation of a small

" garth " or piece of ground. As in other countries the institution of slavery originated in conquest, and slaves, or serfs, were those of the conquered people whom the conquerors captured and condemned to the condition of a servile class. Readers of *Ivanhoe* will recall a vivid description of the serf who wore round his neck a brass ring resembling a dog's collar which bore the inscription : " Gurth, the son of Beowulph, is the born thrall of Cedric of Rotherwood." But although slavery endured until the gradual mingling of the conquering and the conquered races made the English nation, its severity was mitigated by the growth of customs which became definite rules, and also, it may be said, by the tolerance and leniency with which many lords of the manor exercised their rights. It is not too much to say that serfdom never became wholly acclimatized on English soil, and while on the one side there was ineradicable resentment, on the other side there were always many who treated their serfs with consideration and even generosity. Thorold Rogers, in *Six Centuries of Work and Wages*," observes :

Rude, however, and coarse as village life was, it must not be imagined that it was without its hopes and aspirations. The serf could arrange with his lord to remove to a neighbouring town and there prosecute his fortunes, perhaps emancipate himself. The King, when war arose, would look out the likeliest and most adventurous of the youth of all ranks and employ them in his army with good pay and prospects of plunder and ransom. The parish priest would encourage some bright and quick child to devote himself to the schools, to the University, to the service

of the Church in the monastery, or in parochial offices. Many a peasant had heard, doubtless, of the learned Grostête, the son of a serf, the most distinguished scholar of thirteenth-century Oxford. . . . Perhaps with these openings for himself and his kind, the yoke of dependency did not press very heavily on him.

The other class of labour employed on the lord's demesne, or "home farm," was that of tenants of the manor who were under obligation to perform certain prescribed services at specified times and seasons. These services were, however, of the nature of rent, and were in course of time commuted into money payment. As the tenant-farmer class became established and as the compulsory labour of serfs became scarce, the demand for wage-earning labourers increased and was supplied by the landless sons of tenants and by cottagers who either had no land or not enough to supply the means of subsistence.

It was just when the old manorial organization of labour had broken up and the class of free but landless wage-earning labourers had definitely emerged that the catastrophe of the "Black Death" (1348–9) ravaged the countryside. Of the three or four millions who then formed the population of England, says Green (*Short History of the English People*), more than one-half were swept away in its repeated visitations. It was no respecter of persons but the death of large numbers of the cultivators of the soil was especially disastrous. Whole tracts of land were left untilled and an urgent demand

immediately arose for the remnant of agricultural labour. Wages as well as prices rose suddenly and exorbitantly, and, as the historian just quoted remarks, "strife for the first time revealed itself between Capital and Labour."

For the first time also the State intervened to regulate the wages of agricultural labourers. A Royal proclamation in 1349 ordered all men and women—unless living on their own resources, tilling their own land, employed in merchandise, or exercising some craft—"to work on the land where they lived at the rate of wages current in 1346." The Proclamation proved inoperative and was followed by the first Statute of Labourers (1349, 23 Ed. III) and expanded in a series of subsequent Acts of Parliament. Lord Ernle (*English Farming, Past and Present*) thus summarizes their effect:

> The stocks, imprisonment, outlawry and branding were the punishments of those who refused to work, or absented themselves without licence from the hundred where they lived. Every boy or girl who had served in husbandry up to the age of twelve "at the plough or cart" was bound to "abide at the same labour." Justices, either of the Peace or under a special commission, were sworn to enforce the Acts, and to fix the rates of wages at which labourers could be compelled to serve.

In due course the severity of these measures was relaxed, but from that time onwards agricultural labourers were subject in some form or other to restrictions and regulations, which more or less affected rates of wages and in practically all cases tended to depress them.

Adam Smith (*Wealth of Nations*) discussed at length the effect of legislative restrictions on the mobility of labour and consequently on wages. Referring to the law of Settlement as it existed in the latter part of the eighteenth century he wrote :

> The very unequal price of labour which we find in England in places at no great distance from one another, is probably owing to the obstruction which the law of settlements gives to a poor man who would carry his industry from one parish to another without a certificate. . . . The scarcity of hands in one parish, therefore, cannot always be relieved by their superabundance in another, as it is constantly in Scotland, and, I believe, in all other countries when there is no difficulty of settlement.

About that time and for about half a century afterwards, wages of agricultural labourers were generally depressed by the well-intentioned but ill-advised administration of the Poor Law. In 1795 the Berkshire magistrates, impressed by the inadaquacy of agricultural wages, endeavoured to fix a " fair wage " by using the rates to supplement earnings in proportion to the price of bread and the size of families. The inevitable, though unforeseen, result followed. Employers threw upon the rates a part of their labour bill and reduced wages to the lowest possible limit. This vicious system was abolished in 1834 but its influence remained. It had established in the minds of both farmers and labourers the principle of " bare subsistence " as the basis of wages. The supply of labour in the rural districts, owing partly to its relative immobility and partly to the rapid increase of population, was

more than adequate. It was usual for farmers to come to an agreement as to the rate of wages they would pay, while any attempt by labourers to agree as to the rate they would accept was illegal.

To sum up shortly a long and chequered story it was not until towards the middle of the nineteenth century that wages in Agriculture began to be fixed without legislative or administrative interference, which, consciously or unconsciously, tended to depress them.

The intervention of the State in regulating agricultural wages was revived in 1917 by the Corn Production Act, which established an Agricultural Wages Board to fix the minimum rates of wages for agricultural labourers, also enacting that the minimum should not in any case be less than 25*s.* per week for able-bodied adult males. Lord Ernle, who was the Minister responsible for the introduction of this measure, has explained (*English Farming, Past and Present*) that this provision was "necessitated by the prosecution of the plough policy." "The creation," he writes, "of a large subsidized force of supplementary labour—consisting of soldiers, women, school-boys, National Service volunteers, old-age pensioners, interned aliens, and prisoners, though farmers paid for their services the current rates of wages, flooded the labour market, upset the laws of supply and demand, and prevented agricultural workers from profiting by the scarcity of skilled labour."

The Agricultural Wages Board set up under this Act was entrusted with full power to fix minimum rates of wages and to enforce their payment. It formed District Committees which proposed rates and conditions applicable to their localities, and in most cases these proposals were accepted and put into effect by the Board. In a few cases they were slightly modified with the object of securing a certain measure of uniformity and consistency throughout the country. There had always been, however, considerable variations in the rates established in different counties, and these variations were maintained under the Wages Board.

The Agricultural Wages Board was abolished in 1921, and was followed by the establishment of "Conciliation Committees" which, without power of enforcement, endeavoured to maintain minimum rates of wages by agreement. In this they were only partially successful, and after a time many of the Committees ceased to function effectively.

The Agricultural Wages (Regulation) Act, 1924, re-established in form the administrative system of the Act of 1917, but with two important alterations. The responsibility of fixing minimum rates of wages was laid upon the District Committees, and the responsibility of enforcing the payment of them was entrusted to the Ministry of Agriculture. The Agricultural Wages Board, under this system, formally and automatically made the Orders embodying the decisions of the District Committees but had no other power or authority except that of

acting in default of action by a District Committee —a contingency which has not arisen.

The Table on page 84 shows the average weekly minimum cash wages of ordinary labourers in England and Wales fixed under statutory authority together with index numbers which show their relation to the cost of living and the prices of agricultural produce. It should be noted that the "average" wage is the arithmetical result of combining the rates fixed in different districts, weighted by the approximate number of workers affected in each case.

As we have seen, supervision by the State of the relations between employers and employed and the conditions of employment was almost continuous during the Middle Ages and up to the early part of the nineteenth century.

Thereafter for a time the theory of *laissez faire* dominated political action, but the ruthlessness of the industrial system led to a revival of State intervention for the protection, in the first instance, of women and children. The recognition of the right of workers to combine, followed by the rapid growth of Trade Unions, left the settlement of wages generally outside the sphere of legislation, but in the Trade Boards Act Parliament laid down the principle that where the workers in an industry were not sufficiently organized to negotiate effectively with their employers, minimum rates of wages should be settled by bodies equally representative of employers and workers with provision for impartial decision when agreement was not reached.

AVERAGE WEEKLY WAGES AND INDEX NUMBERS OF WAGES, COST OF LIVING AND PRICES OF AGRICULTURAL PRODUCE.

	Average Weekly Wage.	Percentage increases compared with pre-war position.		
		Agricultural Wages.	Cost of Living.	Prices of Agricultural Produce.
	s. *d.*			
1914	18 0	—	—	—
First Wages Board Period:				
July, 1918–May, 1919	30 6	69	114	141
May, 1919–April, 1920	37 10½	110	120	160
April, 1920–August, 1920	43 0½	139	144	186
August, 1920–August, 1921	46 10½	160	140	160
September, 1921	42 3	135	120	116
Conciliation Committee Period:				
1921.				
October	40 1	122	110	86
November	37 10½	110	103	79
December	36 10¾	105	99	76
1922.				
January	33 6½	86	92	75
February	32 10¾	83	88	79
March	32 4½	80	86	77
April	32 3	79	82	70
May	32 1½	78	81	71
June	32 0¾	78	80	68
July	31 11¾	78	84	72
August	31 8½	76	81	67
September	31 6½	75	79	57
October	28 3	60	78	59
November	27 10¾	55	80	62
December	27 10	55	80	59
1923.				
January	27 9½	54	78	68
February	27 9	54	77	63
March	27 10½	55	76	59
April	28 1	56	74	54
May	28 1	56	70	54
June–December	28 0	56	60–77	51–56
1924.				
January–December	28 0	56	69–81	52–64
Second Wages Board Period:				
1925.				
January	28 4½	58	80	70
February	29 0	61	79	67
March	31 0	72	79	65
April	31 4½	74	75	58
May–September	31 5	75	72–74	51–57
October	31 5½	75	76	53
November–December	31 4½	74	76–77	54
1926.				
January–February	31 4½	74	73–75	53–58
March–May	31 6½	75	67–72	49–52
June–December	31 8	76	68–79	46–55

Apart from special circumstances arising out of the war it is by reference to this principle that legislation providing for the fixing of minimum rates of wages in Agriculture is usually justified. The organization of agricultural labourers began in 1872 under the leadership of Joseph Arch, when the Warwickshire Agricultural Labourers' Union was formed. It submitted to the farmers of the district the following demands:

2*s.* 8*d.* per day for our labour.

Hours from six to five, and to close at three on Saturday.

4*d.* per hour overtime.

The movement spread rapidly and the National Agricultural Labourers' Union was formed, its objects being: (1) "To improve the general condition of agricultural labourers in the United Kingdom, (2) to encourage the formation of branch and district unions, (3) to promote co-operation and communication between the Unions already in existence." In less than three months the membership reached 50,000, and within a year exceeded 70,000. The demands of the Union met with opposition from farmers, but wages were raised by two or three shillings per week, and the rate of 16*s.* asked for in the first instance was generally conceded. But its career was short-lived. In the early part of 1874 there was an organized lock-out of all Union men by the farmers in the Eastern counties and some other districts. This involved a heavy strain on the finances of the Union, and also

had the effect of reducing its membership. Dissension broke out, and there were defects of management. By the end of the decade the membership had fallen to 20,000, and by about 1889 the Union had almost disappeared. There was a slight revival in the next year or two, and one historian of the movement gives a list of nine Unions, most of them local, in 1894. At the beginning of the present century there was practically no Agricultural Labourers' organization, although the Workers' Union, which started in 1898 for the purpose of organizing unskilled labour, began to enrol farm-workers. In 1906, however, another attempt was made to organize a new Union for agricultural labourers, which, after some early troubles, was established in 1911 as the National Labourers' and Rural Workers' Union. By the end of 1913 there were 232 branches of the Union scattered throughout 26 counties of England and Wales with a total membership of nearly 12,000.

The establishment of the Agricultural Wages Board with its district committees gave a great impetus to the organization of farm-workers. Mr. Ernest Selley, writing in July, 1919 (*Village Trade Unions in Two Centuries*), stated that at that time "nearly 250,000 farm-workers are paying into the Union." Mr. Robertson Scott (*The Dying Peasant*) states that "by the summer of 1920 more than half of the agricultural labourers were in the two Unions. From the autumn of 1921 with the light harvest, the disappearance of the Wages Board machinery, the rapid fall in wages and the fear of unemployment,

the membership fell away heavily. By the end of 1922 it is doubtful if there remained in the two Unions 30,000 men in good standing." He adds that in 1926 the membership of the Unions did not represent " more than 6 per cent of the agricultural workers," which would make the total about 40,000.

From this summary of the history of the organization of agricultural labourers it is apparent that combination for the betterment of their economic position is as yet far from being established as it has long been in other industries. The reasons for this cannot be discussed, nor do the political aims and influences which have been more or less associated with all the efforts hitherto made in this direction come within the scope of this book.

The combination of farm-workers for the furtherance of their economic interests and particularly for securing fair wages and reasonable conditions of employment is now generally agreed to be desirable. The National Farmers' Union has not only recognized the two Unions representing agricultural labourers but has tacitly admitted the advantage of being able to discuss questions of mutual interest with responsible men able to speak on behalf of many others.

Although happily the bitter opposition which was offered by farmers as a class to the men's organization—a survival in agriculture of the spirit which was universal among employers in industry up to the middle of the nineteenth century—has disappeared, it cannot be denied that many of them

still consider that the amount of wages to be paid is a matter which rests exclusively between master and man and with which no one else has any concern. They overlook the fact that whatever may be said in favour of this principle farmers have not in the past accepted it. The rate of wages in a district was generally agreed among the farmers of the district, and an individual employer considered himself honourably bound to pay that rate even if he did not personally think it reasonable.

Apart from the instinctive aversion of farmers from the interference of the State with wages, there is another reason which has a certain measure of force. Any system of regulating wages, however carefully devised, cannot fail to introduce an element of uniformity, if not rigidity, into conditions of employment which are neither uniform nor rigid. It is a common saying that "a farm cannot be run under factory conditions," and there is a good deal of truth in the remark.

The present writer, in the *Quarterly Review* for January, 1921, stated the case thus:

> There is in connection with agricultural wages a problem which differs in some respects from that presented in other industries, although certain broad principles are common to all classes of wage-earners. A living wage—using that ambiguous term as signifying a wage sufficient to maintain a reasonable standard of life—and hours of employment which leave time for a fair amount of leisure, with provision for extra payment if such hours are exceeded, are among the demands of all workers, whether in the factory or the field. In the cultivation of the soil or the care of live stock the

conditions of employment are less under the control of the employer than in other industries. There are, of course, other occupations in which the weather is an important factor. The work of a builder, for example, may be interrupted and his men become idle for considerable periods. But in farming there is not only interruption of work at certain times, but there is also the need for a compensatory excess of work at other times. If the building of a house is delayed by weather, its ultimate completion may be delayed for a similar period ; but if work on a crop is stopped at one season, it by no means follows that its harvesting can be deferred for an equivalent time. Nature, not the employer, decides when it must be ingathered. With live stock the helplessness of the employer is still more evident. A postponement of milking means not merely the breaking of a contract to supply milk, but in a very short period the total loss of the cows, which represents the cow-owner's capital. There is no other form of enterprise in which the employer's organization of labour-power is so liable to disturbance from causes beyond his control.

It is, however, often overlooked by those who protest against " State interference " or " bureaucratic control " that the Wages Board system, in its original form at any rate, involves neither. It is true that in the Agriculture Act which established the first Wages Board a statutory minimum wage of 25*s.* per week was inserted, although in fact it never became operative. This was State interference with wages in its worst form. To fix by legislation the amount of wages in any industry is outside the legitimate function of the Legislature. Whatever may be the proper basis on which wages should be fixed it is clear that the actual amount

must vary from time to time as conditions change. To stereotype the amount in an Act of Parliament not only violates economic principles but unfairly hampers the industry concerned.

But the establishment of the Agricultural Wages Board so far from involving the interference of the State with wages was expressly designed to place the responsibility for fixing minimum rates of wages on the industry itself. To quote again from the *Quarterly Review* article just referred to :

> The constitution of the Agricultural Wages Board not only establishes the status of the labourer as not less an "agriculturist" than the farmer, but it introduces the principle of self-government in agricultural affairs to a degree which is without precedent. Within the limits laid down by Parliament the Board is independent and all-powerful. Its Orders have the force of law, and there is no appeal against them or their administration, except to a Court of Law. Its operations govern, in a large degree, the economic relations of over a million employers and workers, and thus affect directly or indirectly the lives of at least five million persons. And this is done by a body consisting of representatives equally of farmers and labourers. The pregnant fact that these powers lie not with a Minister or a Department, not even with the Cabinet, but with agriculturists themselves, is not commonly recognized.

These remarks are not altogether applicable to the later system established by the Act of 1924. The fixing of the rates of minimum wages is, it is true, again entrusted to agriculturists themselves in the District Committees, but the administration of the Orders, including their enforcement, is now

undertaken by a State Department the Ministry of Agriculture—and not by an independent Board representing Agriculture.

There is probably no more difficult problem in economics than to determine how, and on what basis, rates of wages are fixed in different occupations, and the difficulty is perhaps even greater in Agriculture than in Industry. Industrial occupations being of comparatively recent origin the supply of suitable labour was at first limited and was from the outset mainly regarded as "skilled." Labour in industry had also the immediate advantage of the development of transport facilities and consequently became relatively mobile at once.

The conditions in Agriculture were entirely different. The supply of labour, except from time to time when pestilence reduced it, was always superabundant, while the immobility imposed by the lack of effective means of communication was long aggravated by repressive regulations. In these circumstances unless employers were swayed by altruistic or charitable motives—as seldom happened—the basis of wages was that of bare subsistence, i.e. the lowest sum which the worker would accept as an alternative to starvation. The agricultural worker was further handicapped by the tradition that his labour was "unskilled." Born and bred on the land he learnt his craft almost unconsciously and failed to realize the amount of skill he had acquired. Yet judged by any fair standard the agricultural labourer needs more skill to do his work

properly than many of those who are classed as "skilled" workmen. Adam Smith long ago emphasized this. "Many inferior branches of country labour," he wrote, "require much more skill and experience than the greater part of mechanic trades. The man who works upon brass and iron works with instruments and upon materials of which the temper is always the same, or very nearly the same. But the man who ploughs the ground with a team of horses or oxen, works with instruments of which the health, strength, and temper, are very different upon different occasions. The condition of the material which he works upon too is as variable as that of the instruments he works with, and both require to be managed with much judgment and discretion."

The cost of labour is commonly discussed by farmers as if it were a question only of the current rate of weekly wages. This obscures the fact that the total labour bill of the farm and the quantity of produce resulting from that expenditure are what really matter. To the farmer it is immaterial whether he pays three men 30*s*. a week each or two men 45*s*. a week each if the total product of their labour is the same in both cases. The economic problem he has to solve is to decide what amount of capital and labour to apply to a given area of land so as to obtain the maximum output from it.

The familiar phrase that "a man should be paid as much as he is worth" embodies a sound economic

principle. It implies that a worker should receive wages proportionate to the amount and quality of his output, which, speaking generally, bears a definite relationship to his personal efficiency.

This may be said to be the economic principle by which wages are fixed, but its application is subject to modification by the impact of other factors which are partly psychological. In comparing rates of wages in various industries the following considerations enumerated by Adam Smith have influence :

1. The agreeableness or disagreeableness of the employments themselves.
2. The easiness and cheapness, or the difficulty and expense of learning them.
3. The constancy or inconstancy of employment in them.
4. The small or great trust which must be reposed in those who exercise them.
5. The probability or improbability of success in them.

Judged by these canons of comparison employment in Agriculture would on the whole tend to be paid at somewhat lower rates than in Industry.

(1) Work on the land, in spite of its hardship and exposure, is more agreeable than in a mine or factory. No doubt it is regarded by many of those who are born to it—and especially by the younger men—as less attractive than industrial occupation, but this arises not so much from the nature of the employment itself as from the fact that greater opportunities for the enjoyment of leisure time are avail-

able in the towns than in the country. (2) An agricultural labourer can learn his craft easily and without expense; he pays for his apprenticeship by his labour. (3) Employment in Agriculture, at the present time, is more constant, for regular workers, than in many other industries. There is, however, a considerable amount of seasonal work which is partly performed by agricultural labourers who are not in regular employment. Since insurance against the risk of unemployment has been adopted as a national policy, the exclusion of Agriculture from its scope has, in some degree, reduced the attractiveness of agricultural labour as compared with other occupations. (4) An industrial worker is frequently entrusted with the care of a valuable machine, but an agricultural labourer is entrusted with the care of live stock which are equally valuable and more difficult to control. (5) If success means rising to a higher position than that of a manual worker, employment in Agriculture offers, on the whole, less chance than in Industry.

The pressure of competition for labour by other industries has always had a marked effect in raising the level of agricultural wages in those districts where it is immediately felt. Thus in 1907, according to returns collected by the Board of Trade, wages in Lancashire were 7*s*. per week (nearly 60 per cent) higher than in Dorset. In fixing minimum rates the Agricultural Wages Board continued the differentiation but reduced its amount. It is sometimes argued that the difference arises from

the greater efficiency of the farm-workers in one county than another, and the same argument is used to explain the higher level of agricultural wages in Scotland than in England. It is difficult to determine which is the cause and which the effect, but the relation between wages and efficiency is apparent, although it still remains true that the competition of other industries, where it is effective, raises the level of agricultural wages.

The fixing of a minimum wage even by agreement between employers and workers is sometimes criticized as tending to place all agricultural labourers on the same level and to discourage payment in proportion to efficiency. This criticism is not altogether ingenuous. Long before minimum rates were fixed every district had its standard rate for ordinary labourers, which took no account of differing degrees of personal efficiency. It is true that higher wages were commonly paid to stockmen, shepherds and others charged with special duties or responsibilities, but the additional payment was sometimes no more than remuneration for longer hours and included no extra payment for skill.

The adoption of the practice of payment by the piece or the job is a recognition of the principle of remuneration in proportion to output. It is only practicable in farm work to a limited extent, but wherever possible it is desirable on economic grounds. It does not necessarily increase substantially the earnings of individual workers because the rates for piece-work are calculated on the basis

of the current rate of weekly wages. By extra exertion the worker can usually make more money in a given time, but he takes the risk of the weather which, when he is working on weekly wages, is taken by the employer.

There appears to be, under modern conditions, a definite limit to the incentive which extra remuneration offers to the worker. Every class of wage-earner tends to set its own standard of living and consequently its standard of remuneration for its services. So long as this standard is reached and maintained the wage-earner is content. He will fight obstinately against its reduction, and from time to time will make an organized effort to raise it, but meanwhile he seems individually little interested in making more money. This rather curious development of industrialism has only recently reacted in Agriculture, but it is already apparent among the younger men working on the land.

There is one other factor affecting the level of agricultural wages which is peculiar to the industry. Payment in kind lingered long in the country, and has not yet wholly disappeared. The first Agricultural Wages Board endeavoured to deal with this difficult question, and although the force of long-standing custom was too strong to permit of placing wages on an exclusively cash basis, they did something to define and restrict the " allowances " which may be reckoned as part payment of wages.

CHAPTER IV

FARM MANAGEMENT

ON the management of the farm, in the last resort, depends the successful utilization of all the other factors of production. It gathers up and binds together all other factors, which can only be effective collectively.

Farm management has two distinct branches, viz. (1) Technical, (2) Economic ; in other words, practical farming and business organization.

We are not, in these pages, concerned with the technical or practical side of management, which is fully dealt with in many books devoted to the subject. On the economic or business side the ability to buy and sell with discretion and judgment is as important a part of the farmer's personal equipment as a knowledge of the art of Agriculture. In the third part of this book, under the heading of "Disposal of Produce," the subject of selling will be discussed, and here we consider only the subject of buying and one or two other points which arise in connection with the business aspect of management.

Reference has already been made to the purchase of farm equipment, which is of the nature of capital

expenditure. The distinction between the investment of capital and current expenditure on the commodities necessary to carry on the business is somewhat arbitrary.

The difference is evident if we regard money spent on machines and implements and other "dead stock"—as it is termed—as replaceable capital, and money spent on seed, fertilizers, feeding-stuffs, and live stock, as reproductive capital. Capital invested in equipment should by its use earn interest and sinking fund sufficient to replace the amount when the equipment has worn out and must be renewed. Money spent on seeds, fertilizers, feeding-stuffs and live stock is advanced out of capital and repaid when the produce is sold, having "fructified" in the interval. Money in this way is used year after year and for convenience may be termed "current" or "circulating" capital.

The amount of current capital required depends not only on the size and character of the farm but also on the system of farming practised. On a purely grass farm used mainly for breeding and rearing cattle to sell as stores, no money may be spent on seeds or fertilizers and very little on feeding-stuffs. On grass farms used for dairying more would be spent on feeding-stuffs but little more on seed or fertilizers. Expenditure on seed and fertilizers on mixed farms is roughly proportionate to the extent of arable land, while expenditure on feeding-stuffs is largest where stock are fattened and particularly where winter stall-feeding is adopted.

Questions as to the advantage of buying seed as compared with using that grown on the farm, and of the superiority of certain kinds of seed—as, for example, that of Yeoman wheat or of disease-resisting potatoes—belong to the technical side of farm management, as also do the relative merits of different kinds of fertilizers for particular crops.

But from the economic or business point of view certain general principles need consideration. In the purchase of seeds, fertilizers, and feeding-stuffs the farmer is specially liable to be defrauded by unscrupulous vendors. All of these commodities lend themselves readily to adulteration or misrepresentation. In the old days the farmer, like purchasers of other articles, had to look after himself. The accepted principle of trading was *caveat emptor* —let the purchaser beware—and this is still the rule in many countries. In Great Britain, however, the State has intervened in the interest of the purchaser, and special Acts of Parliament have been passed for the protection of the farmer against fraud and misrepresentation. If he avails himself of this protection and takes ordinary care he may be sure of obtaining fair value for his money.

The purchase of store stock is a transaction of a different kind. Whether they are cattle, sheep or pigs, they are the raw material, which is bought for conversion into the finished product. The qualities required for the operation are those required by a manufacturer—technical knowledge,

study of the course and tendencies of the market, and sound judgment.

The modern commercial system depends upon a series of intermediary agencies between the original producer and the ultimate consumer of a commodity. In the sale of farm requisities many intermediaries are employed, the value of whose services is, in some cases, questionable. Whatever may be the value of the service, the cost is, of course, borne by the buyers. The rapid extension of the system of sale of stock, both store and fat, by auction has introduced a new class of intermediaries and to a large extent taken the place of the old system of direct dealing between seller and buyer.

The combination of farmers for the purpose of purchasing the commodities ordinarily required in their business arose from the belief that by this means they would be able to buy on more favourable terms than by each acting individually. Not only would it be possible to buy direct without the intervention of agents but, by bulking their orders, wholesale, instead of retail, better terms could be secured.

A movement on these lines was started in England in 1867 by the formation of the Agricultural and Horticultural Association. It claimed to be the pioneer organization of its kind, and its inception and subsequent success were attributable mainly to the enthusiasm of its founder, Mr. Edwin Owen Greening, who was an ardent believer in the principle of co-operation. Other important associations

established on similar lines soon afterwards were the Lincolnshire Farmers' Association, the Cheshire, Shropshire and North Wales Farmers' Supply Association, the Northumberland Agricultural Supply Association, the West Norfolk Farmers' Manure Association and the Western Counties Agricultural Co-operative Association. In 1901 the Agricultural Organization Society was formed, and the number of farmers' co-operative purchase organizations steadily increased. In 1908 an official return showed that there were then 114 such societies in existence, with a total turnover of £710,000 as compared with a turnover of about £50,000 recorded by the eleven societies existing in 1900.

The position in 1914 was stated in a Report on *The Co-operative Purchase of Agricultural Requisites*, issued by the Ministry of Agriculture in 1925. When the war broke out combination for purchase was still the most widely developed form of agricultural co-operation in England and Wales. Societies formed for this purpose numbered just over 200, with a membership of about 24,000 and with a total turnover of nearly £1,700,000. They varied in size and scope from societies serving several counties whose annual sales exceeded £100,000 to others serving groups of small-holders with an annual turnover of a few hundred pounds.

After the difficulties of the war period a strenuous effort was made by the Agricultural Organization Society to extend the movement, and in 1920 the number of associations for co-operative purchase

had reached 250, with a membership of 56,000, and a turnover of about £9,500,000. The fall in prices which then occurred involved many of the societies in serious loss and some of them were dissolved. In 1923 the number of societies had fallen to 193, with a slightly larger total membership, but with a turnover reduced by more than £1,000,000.

Agricultural co-operation for purchase has developed in England on cautious lines. The tendency of English societies is to undertake the supply to its members of a number of different commodities, whereas in other countries it is more usual to specialize by restricting the operations of the society to one class of commodity, such as fertilizers or feeding-stuffs. Nor has there been that close connection between co-operative buying and co-operative credit which is common in countries such as Belgium, France, Germany and Czechoslovakia. To quote from the official Report cited above :

> In England and Wales the development of co-operative purchase has followed the methods of business to which farmers have been accustomed for generations, to which may be attributed the tendency of new societies to start by taking over old-established general businesses, the abandonment by societies of the cash-with-order ideal, and the practice of contra-accounts which many societies find necessary.

The advantages of co-operation have been sometimes stated in sociological terms. The pioneers of the co-operative movement among the industrial classes were idealists and believed that it would

have a moral effect in stimulating a sense of comradeship and cultivating a habit of thrift. With such considerations we are not here concerned. It is only the economic aspect of co-operation that we have to consider.

The tendency of farming is to foster, in those who practise it, a spirit of self-reliance. The man who controls the use of a tract of land, who decides the nature and kind of all the processes of cultivation, must depend on his own judgment. The circumstances of his calling preclude the possibility, or greatly restrict the opportunities, of consultation with his fellows, and he thus acquires a habit of independent action and of general self-sufficiency. Where the system of tenancy is predominant, and rents are variable, the farmer, under the influence of long tradition, becomes instinctively secretive and reluctant to communicate details of his business to others. In short, the bias of the farmer's mind is individualist, and this is particularly pronounced among British farmers.

For these reasons the idea of combining with other farmers in business transactions, and, in some degree, surrendering his independence of action, is one which is not congenial, and the farmer needs to be convinced of its desirability.

Reluctance to accept the co-operative idea may arise also from other causes of a more tangible kind. The supply of farm requisites, particularly of feeding-stuffs and fertilizers, is frequently in the hands of traders who are also buyers of, or dealers in, farm

produce, and business relationships exist which are not easily disturbed. If the mutual transactions were carefully analysed the farmer would possibly find that he is paying excessively under arrangements which, however convenient to him, are not devised for his benefit.

Co-operation can only be advocated as a business proposition on the ground that it will secure by collective trading economic advantages for its members which they cannot obtain by acting individually. The advantages in the purchase of farm requisites which should be secured by co-operation are :

1. Lower prices per unit by purchasing large quantities.
2. Lower costs of transport, especially by rail, on which the rates for truckloads are less per ton than those for smaller quantities.
3. Economy in distribution of bulk consignments from the point of delivery—e.g. railway station or canal wharf.
4. Saving in profits, commissions, and agency charges by intermediaries between the makers of the commodities and the purchasers.
5. Better quality of goods supplied and systematic arrangements for testing it.

These advantages can be secured by an association of farmers, provided that certain principles are adopted. The details of the business will vary

according to circumstances, but the fundamental principles are briefly these:

1. The members of the Association must be users of the commodities in which it deals and must undertake to place all their orders for these commodities with the Association.
2. Every member must be a holder of one or more shares which will form the working capital.
3. Every member must have an equal voice in the control of the Association, i.e. his voting power must not depend on the number or value of the shares he holds, as in the case of joint-stock companies.
4. The management must be entrusted to a committee elected by, and responsible to, the members.
5. The executive officer, acting under the general instructions and supervision of the management committee, must be well qualified for the post, and paid fairly for his services.

If these principles are adhered to, and if farmers grasp the essential fact that co-operation implies loyal and unswerving support of their own association and personal interest in its success, the economic advantage is practically assured.

The management of a farm as a business enterprise involves much more than careful buying and selling, important as they are. The farmer, as manager, must organize the resources at his disposal

so as to obtain from them the greatest possible output. At the outset of his operations he must come to a decision as to the general lines on which he will conduct his business. His decision must largely be dependent on the circumstances of the case and on the factors of production. But within the limits thus fixed he will usually have a considerable range of choice, and his decision will be made on economic grounds. If the farm is suitable for dairying, for example, he must decide whether milk-selling, butter-making or cheese-making will be his chief objective. This will depend largely on accessibility to markets. In deciding what crops he will grow, local conditions will again influence his judgment. The conditions may be favourable for the profitable production of special crops such as hops, fruit, vegetables or sugar beet, and the farmer, as manager of the business, will decide, as a matter of business policy, whether they are worth growing in his circumstances.

In his managerial capacity the farmer not only directs the general policy of his business, but he arranges, and supervises, the working of its various branches. The utilization in the most effective and economical manner of the mechanical, animal and human power on the farm involves careful organization. The equipment of the farm needs constant oversight to avoid unnecessary wear and tear and rapid depreciation. The carelessness with which valuable machines are sometimes treated, and the exposure to which they are needlessly

subjected, are indications of inefficient management.

A test of efficient farm management is that of adaptability to rapidly changing conditions, and to this test British farmers were subjected in an unusual degree during the war period. An example of the way in which the organization of a farm was adjusted to unprecedented conditions appears in the *Journal of the Royal Agricultural Society* for 1921 (vol. 82). The accounts of a farm in the Eastern counties for the years 1913–20 were analysed, and it was stated that these might be regarded as representative of many others. The farm is a tenant-holding, 965 acres in extent—734 acres being arable and 231 grass. It is situated several miles from the railway, and the rent—16*s.* 2*d.* per acre—remained unchanged during the whole period reviewed. The writers of the article—Messrs. C. S. Orwin and S. J. Upfold—regard the result of their analysis as demonstrating "the high standard of efficiency of organization in the management of this farm. The withdrawal of skilled labour, involving the substitution of less skilled workers, was met by the addition of the equivalent of one full-time man, and the labour equipment was then stabilized on this new basis while the war period lasted. The total outgoings, which rose sharply in the early years, soon found a new normal at which they remained. The lack of fertilizers and feeding-stuffs produced no measurable diminution of output."

Resourcefulness in meeting unexpected difficulties

and maintaining output in spite of them is evidence of managerial ability.

The importance of business aptitude and managerial capacity is sometimes insufficiently recognized in agricultural education. From the various colleges, farm institutes and other educational establishments there is now, in many countries, a constant flow of young men who have been trained for farming. They are equipped with some scientific knowledge and have frequently acquired experience in the technique of farming. But when they come to the management of a farm they are apt to find their "college" training inadequate for the attainment of success. They are lacking on the business side. This point is well put by Mr. James Wyllie in an article in the *Transactions of the Highland and Agricultural Society of Scotland*, for 1925. He assumes that managerial capacity is responsible for 80 per cent of a farmer's success, and states that many authorities would put it higher than this. Then a ten per cent improvement in technical ability would be of no greater monetary value than a $2\frac{1}{2}$ per cent improvement in managerial capacity. Take the case of two farmers. A is 60 per cent efficient in management, but only 20 per cent efficient in technical knowledge; B is 90 per cent efficient in technical knowledge, but only 30 per cent efficient in managerial capacity. What are their relative chances of success? Assuming that all other factors are equal, A's combined mark will be 60 per cent of 80 plus 20 per cent of 20=52;

and B's combined mark will be 30 per cent of 80 plus 90 per cent of 20=42. "Does not this suggest the explanation as to why the 'college trained' man—strong in technical knowledge but lacking in managerial capacity—often fails where the every-day farmer—weak in scientific lore but comparatively strong in the science of management and organization—succeeds?"

It also explains the fact that the trained man of business on his retirement will often take a farm and carry it on successfully, without any previous technical knowledge of agriculture. He applies to the business of farming the methods which have enabled him to attain success in some other avocation. One of the methods, it may be added, is the faculty not only of delegating to his staff such duties as they are competent to perform and placing on them the responsibility for their performance, but also of availing himself fully of their knowledge and experience.

The management of a farm, like that of any other business, consists very largely in the management of the men. This implies more than the organization of labour, important as that is. Manual labour, as we have already seen, is a part of the power equipment of a farm, and its most effective and economical utilization, in combination with machines and horses, is an essential part of farm management. But human labour, being human, is more than mere physical force, and the art of management consists in utilizing the intelligence

as well as the muscles of men. In the actual use of land and the personal control of stock, the knowledge of the experienced farm-worker is often greater than that of his employer. The judicious employer will avail himself of this knowledge, as indeed many of the most successful farmers do. But all do not recognize that the personal knowledge and experience of the farm-worker have a value over and above the value of his ability to perform the physical tasks which make up the routine of the farm. It is usual, of course, to pay men entrusted with special tasks a higher weekly wage than other workers; but this is sometimes no more than payment for extra time and includes no addition for personal knowledge and skill.

The relations between employers and workers in Agriculture are, by the nature of the case, more personal and intimate than in modern business generally. This makes the management and supervision of the staff in some respects more easy and in others more difficult. As in other business enterprises the object of the employer is to obtain from those whom he employs the best and fullest service of which they are capable. Human nature being what it is, this can, as a rule, only be obtained by a sufficient incentive. Wages in Agriculture, for various economic reasons, will always be fixed on a lower level than those in many other industries. There are some who think that the wage nexus between employer and worker in Agriculture does

not in itself provide a sufficient incentive. It gives the worker no personal interest in the success or failure of the enterprise, and offers little inducement to him to place his experience and knowledge fully and freely at the disposal of his employer. The recognition of this fact has led certain employers to adopt schemes whereby the workers acquire pecuniary interest in the business and, in some cases, an opportunity of participating, in some degree, in its management.

Farming partnerships are not very common, but where they exist it is usual to divide the functions of management between the partners, one—if there are two—undertaking the technical side and the other the business side.

PART II

COSTS OF PRODUCTION

CHAPTER V

FIXED CHARGES

MUCH economic dissertation has been lavished on the scientific definition of cost of production. Upon this field we shall not attempt to enter, but it may be useful to quote Marshall's definition as stated in his *Elements of Economics of Industry*:

> The production of a commodity generally requires many different kinds of labour and the use of capital in many forms. The exertions of all the different kinds of labour that are directly or indirectly involved in making it; together with the abstinences or rather the waitings required for saving the capital used in making it: all these efforts and sacrifices together will be called its *Real Cost of Production*. The sums of money that have to be paid for these efforts and sacrifices will be called either its *Money Cost of Production*, or, for shortness, its *Expenses of Production*, they are the prices which have to be paid in order to call forth an adequate supply of the efforts and waitings that are required for making it; or, in other words, they are its supply price.

To the average farmer, untroubled by economic

theory, the cost of production is the sum of all the payments made in respect of the farm during the year. Unless he keeps carefully analysed accounts his calculation is only approximate, and in many cases inaccurate, as a measure of the actual cost of the products he sells.

The tenant-farmer usually regards his rent as a fixed charge on his business and as the primary item in his costs of production. It might surprise him, but it would certainly not alter his opinion, to learn that the rent of agricultural land does not enter into the costs of production. For the expenses of production—again to quote Marshall—are " taken with reference to produce raised on poor or badly situated land that pays no rent at all ; or else produce raised on good land by the marginal doses of labour and capital, which only just paid their way, and afforded no Surplus or Rent."

The theory of farm rent is that it represents the value for agricultural purposes of a particular tract of land over and above land which has no agricultural value, and is in economic phraseology on the " margin of cultivation." This term in its simplest expression applies to land which, by reason of its soil or unsuitability of situation, will barely repay the application of capital and labour. Examples may be found in hilly districts where large areas of moorland, affording in its natural state meagre sustenance for sheep, are let at rentals of 1*s.* or even less per acre. In newly settled countries, and indeed in old countries to some extent, there is a physical " margin

of cultivation." A visible line divides land suitable for economic use from land which is obviously unsuitable. But the "margin of cultivation" in an economic sense has no relation to locality. During the severe agricultural depression of the "nineties" many farms in Essex which had long been cultivated successfully became derelict, and were for a time outside the "margin of cultivation" under the existing conditions. Absence of transport facilities, inaccessibility of markets, inability to obtain labour and many other causes may place even highly fertile land beyond the "margin of cultivation."

The rental value of land not only varies with its natural fertility, but is affected by other factors, of which proximity to large centres of population and facilities for rapid transport to market are the chief. Thus land having these economic advantages may be let at £4 or £5 per acre, while other land of equal or even greater natural fertility may not be let at more than 15*s.* or 20*s.* per acre if it is remotely situated. The economic theory of rent does no more than lay down a general law, the operation of which is deflected by various circumstances when it is applied to particular cases. Rents are in the long run fixed by competition and those who compete for farms are often unconsciously applying the law when they attempt to calculate the economic advantages of one farm over another. But while rents, as has been said, are fixed ultimately by competition, and an eager demand for farms will raise the general level and a slack demand will

depress it, many considerations tend to qualify the strict application of the competitive principle. Rack rents—i.e. rents which are the highest which can be obtained by open and unrestricted competition—are comparatively rare in England. On large estates landowners formerly selected their tenants, commonly giving a preference to those whose families had long been settled on the estate, and in some cases insisting on certain personal qualifications or adherence to certain political or religious views. In such cases rents were fixed on a customary rather than a competitive basis, although, as times changed, there might be a general revision of the whole rent-roll and the establishment of a new level. With the passing of the old system and the establishment by legislation of a new relationship between landlords and tenants, conditions have greatly changed, but it still remains true that in the letting of farms the competitive principle is in a greater or less degree modified in its application.

Regarding rent, in non-technical language, as a charge on the farm, its amount in an old country is made up in unequal proportions of three elements, which arise from : (1) the natural fertility of the soil ; (2) the additions and improvements made by man ; (3) the proximity of a large population and the public services and social amenities which result therefrom. In many parts of England " sporting rights " are another element affecting farm rents.

The ownership of a farm by the occupier obscures

the incidence of rent, but does not abolish it. The amount of the annual rent, indeed, is only an expression, in different terms, of the value of the farm as a realizable property. In other words, from the owner's point of view, it is the interest on the capital value of the land. In the case of the farmer buying his farm it is clear that he should obtain a sum in respect of the interest on his investment, which is, in fact, equivalent to a rent.

The nature and incidence of agricultural rents are more clearly seen in a newly developed country than in an old country where there are greater complications.

In the Prairie Provinces of Canada, for example, where there are thousands of square miles of land of practically uniform quality and equal natural fertility, the capital and rental value of farms are governed almost entirely by accessibility to the means of transport. In a few districts the proximity of centres of population has some influence on values, but broadly speaking, transport facilities are the determining factor. In this case the margin of cultivation is clearly the limit of readily available transportation. The average capital value of utilized agricultural land in the three Provinces varies from about £3 to £7 per acre.

It will be seen, therefore, that the proportion of rent which is attributable to "the inherent capabilities of the soil" (to use a time-honoured legal phrase) may be small even in the case of recently occupied and unimproved land. In countries where

the land has been for centuries put to agricultural use the amount of capital sunk in it has been in many localities enormous. Much of the expenditure which has increased the rental value of agricultural land has come from public sources. In some cases it has been directly expended with that primary object. In Arizona the Roosevelt Dam, constructed at the cost of the State, enabled some 200,000 acres which were quite unproductive to be irrigated, and raised the assessed value of the district from £1,000,000 to £12,000,000 almost immediately. Many Government undertakings of a similar kind—the Assouan Dam in Egypt is another instance—have had the same result. In India, for example, a great part of the country has been improved for agricultural use at the expense of the State.

In many countries, and notably in Great Britain, the capital expenditure which converted unproductive into productive land has been undertaken by private enterprise. The means of transportation, which are essential to agricultural development, were to some extent provided in the past from public funds, but the construction of roads and bridges was for centuries a liability falling upon landowners as a condition of their ownership, and subsequently chargeable on the inhabitants generally of the adjoining parishes. In the seventeenth century the formation of Turnpike Trusts established the principle of charging the cost of road-maintenance on the public generally and particularly on the users of the roads, and on the abolition of

turnpikes in the latter part of the nineteenth century the liability was thrown on the rates, assisted latterly by subventions from State funds. The most recent development is to place the liability for a large proportion of the cost of highways on the Road Fund which is derived from taxation falling upon owners of motor-vehicles.

Means of transportation other than roads—such as canals and railways—have been provided wholly by private enterprise.

A large part of the area of Great Britain in its original state consisted of marsh and woodland, and its natural fertility was not available for Agriculture. The slopes of the chalk downs on which the familiar "lynches" or terraces still record the early tillage of the land, stand, by reason of the shallowness of the soil, low in the scale of natural productivity, and the greater part of the most productive land now used for agriculture has been reclaimed at great expense from its natural condition.

The process of reclamation by private enterprise has extended over a long period. It was begun no doubt by the Romans and continued under the Saxons, but it was systematically carried on by Manorial lords after the Norman Conquest. Around practically every manor was a fringe, greater or less in extent, of waste which the lord gradually reclaimed and brought into agricultural use.

This reclamation, extensive in the aggregate, was carried out piecemeal and spread over several centuries. But there have been large schemes of

reclamation of which that of the Fens was the most notable. The area dealt with comprised about 700,000 acres and extended into the six counties of Cambridgeshire, Lincoln, Huntingdon, Northampton, Norfolk and Suffolk. Several portions were reclaimed from time to time but it was not until the early part of the seventeenth century that an attempt was made to deal comprehensively with the whole area. A few individuals, headed by the fourth Earl of Bedford, who put £100,000 into the venture, undertook the operation, which was completed in 1649, although for more than half a century afterwards the work was in constant jeopardy from the attacks of the Fenmen, who broke down embankments, opened flood-gates and filled up the drains in an attempt to restore the Fens to their original state.

Another famous instance of the expenditure of capital on the improvement of land is that already mentioned of Coke of Norfolk, who turned a tract of thin sandy soil, yielding only a scanty crop of rye, into one of the most productive areas in the country. In this instance there is some measure of the effect on rent of capital outlay. The annual value of the Holkham estate was raised in forty years from £2,200 to £20,000. In other words, about 90 per cent of the rent of this land represented the expenditure of capital on its improvement.

In these times of monetary disturbance it is difficult to estimate the cost of reclamation, but it may be roughly calculated that to turn 1,000 acres

of rough grazing, now let at, say, £50 per annum, into a lettable farm, equipped with the necessary buildings, fences, roads, water-supply, drainage, etc., would cost at least £12,000 and probably more. It might be let at, say, 15*s.* per acre, or £750, which would give a gross return on the outlay—apart from the original cost of the land—of about 6 per cent. The annual outlay on repairs, maintenance and insurance is commonly reckoned at 33 per cent of the gross rental, which would reduce the net return on the capital invested to 4 per cent.

Many statements have been publicly put forward to prove that the net return received by landowners is substantially less than 66 per cent of the gross rental. In 1924 the Land Agents' Society, in co-operation with the Central Landowners' Association, submitted a memorandum to the Committee on National Debt and Taxation, in which returns from ten agricultural estates in England and Wales, having a total area of 16,760 acres and an aggregate rental of £20,381 were summarized. The analysis showed a net income of £9,619, or 47 per cent of the gross rent.

There are fixed charges on much of the land in Great Britain which, although not falling directly upon occupiers of farms, unless they are also the owners, tend to increase the rents paid by tenants. These are the Land Tax and Tithe Rent charge.

The Land Tax was originally devised after the Restoration as a source of revenue to compensate the Crown for emoluments derived from the remnant

of the old feudal dues which were abolished during the Commonwealth. The proposal was negatived in the Restoration Parliament by two votes, but was revived and passed into law in 1692. It was then a charge of 4*s.* in the pound on incomes, and on the yearly value of landed property, but in practice it was collected almost entirely from owners of real estate. For more than a century it was renewed annually, by Act of Parliament, at various rates in the pound, but in 1798 it was fixed at a perpetual charge of 4*s.*, with provisions for redemption which have been largely made use of. In 1833 personal property was formally excluded from liability and the Land Tax became legally, what it had long been practically, a charge on land only. By the Finance Act, 1896, the tax was reduced to 1*s.* in the pound.

The payment of tithe, or the tenth part of the produce of the land, originated under Mosaic law, and with the introduction of Christianity became a religious obligation. In Great Britain the payment was at first only customary, but in A.D. 970, nearly 400 years after the landing of Augustine, it was made a legal liability enforceable by penalty and distraint. For over 900 years tithes were payable in kind, but as Agriculture developed, the inconvenience and disputes which arose in many cases led to arrangements between tithe-payers and tithe-owners to compound for a money payment. In 1836 an Act for the General Commutation of Tithes was passed, and thereafter they became in

all cases a monetary charge on the land. The Act did not fix a definite sum, but converted tithes into corn-rents varying annually in accordance with the septennial average of the prices of wheat, barley and oats. In 1926 the basis of the charge was altered, and instead of a fluctuating amount it was fixed permanently at the sum of £105 for every £100 of commuted value, and provision was made for the compulsory redemption of all ecclesiastical tithe, the sum of £4 10*s.* being added to provide a sinking fund. It should be explained that up to the time of the Reformation all tithes were ecclesiastically owned, but at the dissolution of the Monasteries the tithes owned by these institutions were transferred, in many cases, to lay owners. About one-fourth of the total amount of Tithe Rent Charge is now in lay ownership, and to this the provisions for compulsory redemption do not apply.

All real property in Great Britain is liable to local rates, imposed, in the first instance, for the relief of the poor, which was then regarded as a local and not as a national obligation. The principle of liability was laid down in an Act of 1601, which directed the overseers of the poor to raise the requisite sum "by taxation of every inhabitant, parson, vicar, and other, and of every occupier of lands, houses, tithes impropriate, or propriations of tithes, coal mines, and saleable underwood." A previous Act, of 1597, had empowered the churchwardens and four substantial

householders, to be called overseers of the poor, to tax " every inhabitant and every occupier of lands " in the parish " according to the ability of the same parish." In practice the rental value of premises occupied came to be taken as a convenient measure of ability to pay, and the liability therefore fell on real property while personal property escaped. It was not, however, until 1840 that personal property and the profits of stock-in-trade were legally exempted.

The incidence of the liability to rates on this basis pressed with undue heaviness on agricultural land. Accepting the principle that the rental value of premises occupied is a fair measure of ability to pay, it is apparent that the relation of rent to income is different in the case of agricultural land from that in the case of houses, shops or factories. As the basis of the Poor Rate was taken, in course of time, for raising funds for a variety of objects, e.g. roads, police, lighting and education, it was further contended that the benefit received from such expenditure was less in the case of owners and occupiers of agricultural land than in that of the owners and occupiers of other kinds of property. The Agricultural Rates Act of 1896 recognized the force of these contentions and reduced the charge on agricultural land by one-half, the deficiency being made up to local authorities by a grant from the Exchequer.

The Agricultural Rates Act, 1923, extended this relief and provided that the occupier of agricultural land should in future be liable only for one-fourth

of the rate in the pound payable in respect of buildings and other hereditaments. Agricultural land for the purpose of this Act was defined as "any land used as arable, meadow, or pasture ground only, cottage gardens exceeding one quarter of an acre, market gardens, nursery grounds, orchards or allotments."

The ultimate incidence of rates as between the owner and the occupier of a farm (where they are different persons) has led to much controversy. It is argued that a tenant in taking a farm will always have regard to the rates chargeable upon it, and that the rent he is willing to pay will be reduced by the amount of the rates, which will thus be paid indirectly by the owner. On the other hand it is argued that the liability to rates cannot be precisely calculated, as the amount may vary from time to time, that any increase or decrease in the amount payable during the tenancy is not, in fact, reflected in an alteration of the rent, and that in any case the amount of rent for which a farm can be let at any given time is determined by a variety of factors, among which rates are only one.

This controversy is avoided and the economic position is more clear if we consider the case of the owner-occupier who, it is obvious, pays all charges falling on the farm. As 25 per cent of the agricultural land and 23 per cent of the total number of agricultural holdings in England and Wales are occupied by the owners, the case has a very practical significance.

What may be termed the "fixed" or overhead charges which the owner-occupier has to meet are therefore :

1. Interest on fixed and working capital.
2. Land Tax and Tithe Rent charge (not universal).
3. Rates (including in some districts special rates, e.g. for drainage or upkeep of sea-walls).

Those charges which are legally enforceable, i.e. Land Tax, Tithe Rent charge and Rates, have priority, and if any part of the capital invested is borrowed (as is frequently the case), the payment of interest is also a legally enforceable charge, and takes priority accordingly.

In all countries farming is very largely conducted on borrowed capital. In the United States, for example, "41 per cent of the farms occupied by owners in 1920 reported a mortgage indebtedness which amounted in the aggregate to over four billion dollars" (*Elements of Land Economics*, by Ely and Moorhouse). There are no statistics for the indebtedness of tenant-farmers. In Great Britain also the extent of farmers' borrowings is unknown. Credit on the security of the land, the live and dead stock, is largely obtained through the country banks, and also from private persons such as dealers. The provision of greater facilities for obtaining credit on reasonable terms, and by Government aid, has been frequently advocated, and in 1923 the Agricultural Credits Act was passed to meet the demand. The first section of this Act

was intended to meet the special circumstances of farmers who had bought their farms during the period of inflated land values immediately after the war. It authorized the Public Works Loan Commissioners to lend money to approved associations for the purpose of making advances on certain mortgages. Such mortgages must comply with the following conditions: (*a*) the borrower must be a person who has agreed to purchase the land comprised in the mortgage not earlier than April 5, 1917, nor later than June 27, 1921, or his heir; (*b*) the land must be agricultural land; (*c*) the amount secured by the mortgage must not exceed 75 per cent of the value of the land at the date when the advance or transfer was made, or exceed thirty times the annual value of the land; (*d*) the rate of interest is to be prescribed by the Treasury; (*e*) the amount secured with interest must be repayable within a period of sixty years by equal yearly or half-yearly payments; (*f*) the land must be freehold or copyhold land, free from any encumbrance affecting it in priority to the mortgage other than a land improvement charge or other charge to which priority is given by Act of Parliament.

The second section of the Act empowered the Ministry of Agriculture to take steps to promote the formation or extension of agricultural credit societies having for their object the making of advances to their members, repayable within not more than five years, for such agricultural purposes as may be approved by the Minister. The Minister

is also empowered by the Act to make advances to such societies.

The provision for assisting occupiers who had bought farms was effective, and by May of the year following the passing of the Act about £3,500,000 had been advanced by the Public Works Loan Commissioners for this purpose. But the scheme for promoting the formation of Agricultural Credit Societies met with little success although £500,000 was allocated by the Treasury for such advances as might be required.

In many countries, notably Germany, Italy, France, Denmark and Czechoslovakia, a widespread system of Agricultural Banks organized on co-operative principles exists, and the facilities for obtaining credit thus provided are extensively utilized by farmers. Although the adoption of some such system by British farmers has long been advocated, the arguments in its favour have fallen on deaf ears, and farmers generally prefer to rely on such private arrangements for borrowing money as they can individually make.

There is among British farmers a marked reluctance to admit that they need to borrow money to carry on their business, and to this sentiment is largely attributable their aversion from transactions of this nature through the medium of an association which would involve giving a certain degree of publicity to their affairs. In commercial life credit is the mainspring of business, and the extent to which a trader can obtain credit is in a large degree

a measure of his financial standing. In the use of land for Agriculture credit is more necessary, and the basis on which it rests is more sound, than in most commercial or industrial undertakings.

Among the "fixed charges," but in a different sense, on a farm, Labour should be included. The phrase that "Labour is a first charge on the Land" has become a political catch-word, but we are here concerned only with its economic significance.

As has already been seen there are broadly two classes of farms, viz. the family farm, and the labour-employing farm.

In the case of the family farm, where the whole of the output is the result of the work of the farmer and his family, it is evident that their remuneration, in cash or kind, is the first charge upon the land, as they must obtain from it the means of subsistence to enable them to secure any output.

The case of the labour-employing farm is apparently less clear but is essentially the same. The work of the occupier, whether by hand or brain, must be remunerated, and similarly such additional labour as is necessary to obtain a return from the land must be paid. The whole art of farming being based on the application of labour, the claim of labour to the products is apparent.

On a labour-employing farm, under ordinary conditions, the farmer is entitled to expect interest on the capital invested and wages, or salary, of management. This is manifest if the farmer does not himself manage the farm, but

employs a bailiff for that purpose. But it is sometimes overlooked that if capital is invested in a business enterprise the interest earned commonly includes remuneration for the services of the investor. If a man invests £10,000 in taking and stocking a shop he will look for his personal remuneration to the interest on the money invested. If he makes a profit of £500 he considers he has earned 5 per cent on his capital; if he makes £1,000 he has earned 10 per cent. A man who invests £10,000 in taking and stocking a farm might, by investing it instead in safe securities, obtain an income of, say, £500, and would be free, if he had the capacity and opportunity, to earn an additional income from a salary in some other occupation. It is evident, therefore, that if he devotes his time and energy to the management of the farm in which his capital is invested remuneration for his services is in the nature of a first charge on the business. But it is evident also that manual labour is not less important than managerial labour if the farm is to be carried on. Indeed, although they may be classed as of equal importance, the necessity for the remuneration of manual labour is the greater of the two. The farmer may be able to forgo for a time the wages of management, if he is receiving a sufficient amount of interest on his capital to enable him to live. But the payment of manual labour cannot be deferred. If wages cease the men must seek other employment and the operations of the farm are stopped.

It thus appears that labour may be properly

regarded as a first charge on the land, after those charges which are legally enforceable have been met. It might indeed be contended that as no charges can be met if the land is not cultivated the labour by which it is cultivated takes priority over other outgoings.

This intimate and inextricable association of labour and land has not yet been fully appreciated in all its implications. The present relations of employer and employed—both applying labour in different forms to the land—have, as we have seen, arisen out of centuries of economic and social change, and are largely based upon traditions which have become obsolete. In these later times they need re-adjustment so that the indissoluble "partnership" of capital and labour, which Nature herself imposes imperatively on those who use the land for Agriculture, may be expressed in the terms of their co-operation.

CHAPTER VI

CURRENT EXPENSES

THE chief items of current expenditure, other than those referred to in the last chapter, are payments for Seed, Fertilizers, Feeding-stuffs, Fuel for engines, and Repairs. Insurance premiums, in so far as they cover buildings and equipment, may be regarded as a fixed charge, but if they cover crops or live stock they may be regarded as current expenses varying from time to time. Transport charges come under the head of "Disposal of Produce."

Expenditure on seed, fertilizers and feeding-stuffs depends not only on the size and character of the farm, but also on the system of farming adopted. Its amount is therefore mainly a question of practical management.

In old-fashioned farming the purchase of seed was unusual. The "tail" or inferior corn from the last crop was often regarded as good enough to sow for the next, and if grass-seed was wanted the sweepings of the hay-loft were used. The importance of good seed is fully recognized in modern Agriculture and its purchase for all kinds of crops is now a general practice.

The purchase of feeding-stuffs is usually necessary where stock are kept, to supplement the produce of the farm, such as grass and roots, which is devoted to their maintenance. The corn crops may be grown primarily for market, or they may be mainly consumed on the holding, and the course adopted will obviously affect the amount expended on supplementary feeding-stuffs. Sometimes "grass-keep" or a crop of growing roots is bought, and the stock sent to consume them on the ground, and this, of course, comes in the category of expenditure on feeding-stuffs.

Expenditure on fertilizers, again, is determined by the area and nature of the crops grown, and also by the number and kind of stock kept, and the extent to which farmyard manure is made on the farm.

A few instances will illustrate the variableness of these items of expenditure.

The accounts of three dairy farms in Cheshire given in the *Journal of the Royal Agricultural Society* for 1886 show the percentage to total outgoings of expenditure on the chief items :

	I.	II.	III.
	Acres.	Acres.	Acres.
Total acreage . . .	288	166	152
Arable	104	82	102
	Per cent.	Per cent.	Per cent.
Rent, tithe, rates, etc.	37	30	42
Labour	22	22	26
Feeding-stuffs . . .	34	36	23
Fertilizers	7	12	9

A large number of farm accounts were collected

and summarized by the Royal Commission on Agriculture of 1893–5.

For a farm of 750 acres, of which 660 were arable, in mid-Norfolk, the accounts for nine years were summarized. Those for the first and last years of the period showed the relations of the items of expenditure as follows:

	1884–5.	1892–3.
	Per cent.	Per cent.
Rent, tithe, rates, etc.	32	25
Labour	32	35
Feeding-stuffs	15	20
Fertilizers	5	2
Other outgoings	16	18

On a farm of 300 acres, with 280 acres arable, in mid-Norfolk, the accounts for the eight years 1886–93 showed an average of 18 per cent of the total expenditure spent on feeding stuffs and seed, and 5 per cent on fertilizers.

The following table summarizes the particulars for four farms in Dorset for the year 1893:

	I.	II.	III.	IV.
	Acres.	Acres.	Acres.	Acres.
Total acreage	686	202	1,122	840
Arable	420	160	335	297
	Per cent.	Per cent.	Per cent.	Per cent.
Rent, rates and taxes	28	31	47	30
Labour	43	39	23	23
Feeding-stuffs	9	17	16	26
Fertilizers	12	4	3	2
Other outgoings	8	9	11	19

The "other outgoings" in these statements include seed and repairs and in some cases a certain amount of corn bought for stock and poultry.

For a farm in South Wilts summarized accounts for each of the twenty-six years 1868 to 1893 show the following figures for the first and last year of that period. It had been occupied for seventy-seven years by the same family. In 1868 the area was 836, and in 1893 827 acres:

	1868.	1893.
	Per cent.	Per cent.
Rent, rates and taxes	41	18
Labour	27	24
Feeding-stuffs	4	30
Fertilizers	3	1
Other outgoings	25	27

To the Royal Commission on Agriculture of 1919 a well-known Leicestershire farmer submitted a summarized statement of his accounts for what he described as "five fairly typical years"—four before the war, and one under war conditions. During the first four years the land occupied was 900 acres, of which 450 acres were arable, and in 1918 740 acres, of which 470 were arable. Converting figures into percentages on the same basis as in the cases above given the comparison is as follows, although unfortunately feeding-stuffs, fertilizers and seed are not separately distinguished;

	1898.	1903.	1908.	1913.	1918.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Rent and rates	34	34	30	31	26
Labour . . .	37	34	32	38	33
Feeding-stuffs, fertilizers and seed . . .	22	23	29	32	23
Other outgoings	7	9	9	9	18

To the same Commission a Durham farmer occupying 202 acres, of which 129 acres were arable, submitted a summary of accounts for the year ending May 31, 1919, showing the proportion of total expenditure to be: Rent and rates 19 per cent, Labour 29 per cent, Feeding-stuffs 14 per cent, Fertilizers 5 per cent, and Seed 10 per cent.

In the investigation by Mr. H. J. Vaughan into the comparative production of grass and arable farms previously mentioned (p. 61), two areas, one mainly grass and the other mainly arable, were carefully surveyed and particulars obtained from the farmers. One area near Rugby had about 95 per cent grass-land and the other, in the Cotswold district, had about 72 per cent arable. In the grass area the farms were divided into two groups deriving their principal revenue from dairying and stock-fattening respectively. On these three groups of farms the comparative use of feeding-stuffs and fertilizers is indicated in the following statement, showing in each case the quantity in tons per 100 acres:

	Feeding-stuffs. Tons.	Fertilizers. Tons.
Cotswold (arable) . . .	6·75	4·54
Rugby (dairying) . . .	9·24	2·72
Market Harborough (stock-fattening)	2·21	1·89

The analysis of the cost of manual labour in each of the three groups of farms is also of interest:

	Acres per man.	Wages per acre.	Sales per man.
		£ *s.* *d.*	£
Cotswold	40	2 0 0	271
Rugby	73	0 19 8	478
Market Harborough .	100	0 16 11	687

In all these examples the purchase of stock has been excluded from total outgoings for the purpose of the calculation. Such expenditure falls into a separate category from the current expenses of the farm. In some cases it is considerable, and in others altogether absent or negligible. It has a direct bearing on the amount spent on feeding-stuffs and fertilizers, and accounts, in some degree, for the variations shown in the different statements.

Expenditure on feeding-stuffs and fertilizers is regarded in modern farming as being partly an investment of capital. The purchase of feeding-stuffs, and particularly of concentrated food such as oil-cake, results in a manurial residue which helps to maintain and increase the fertility of the

soil. In the case of manure thus applied, and also in that of purchased fertilizers, the whole of the manurial value is not made use of by the crop to which the manure is applied. On this assumption is based the provision for compensation to an outgoing tenant for the value of the manures applied by him which is still left in the land when he quits the holding. On the basis mainly of experiments made at Rothamsted, Lawes and Gilbert in 1875 constructed a schedule showing for each of the chief fertilizers the proportion taken by the first crop and the varying periods over which the effect of the remainder would be realized in subsequent crops. This schedule was revised in the light of later experiments and experience by Hall and Voelcker in 1914, and forms a guide to valuers in calculating the unexhausted manurial values for the purpose of claims for compensation under the Agricultural Holdings Acts.

It should be added that among both practical and scientific agriculturists some are sceptical as to the extent to which and length of time during which these residual manurial values are actually realizable, and further revision of the schedule is contemplated.

At the Woburn Experimental Farm a series of experiments was started in 1876 with the object of testing, in actual farm practice, the accuracy of Lawes and Gilbert's estimates of the unexhausted manurial value of purchased foods as set out in their tables. Before the issue of these tables it was the

practice to award compensation to an outgoing tenant—when the right to it was recognized either in the agreement or by the custom of the country—in respect of the unexhausted value of manure made from purchased cake and corn, on the basis of its original cost. Sir John Lawes pointed out, as early as 1861, that this basis was unsatisfactory, and in conjunction with Dr. Gilbert drew up the schedule above mentioned, taking as the basis the respective quantities of nitrogen, phosphoric acid and potash contained in the various foods. The Woburn experiments were devised to test the effects of two foods—decorticated cotton-cake and maize-meal—the former standing very high in the Lawes and Gilbert schedule with 6·9 per cent of nitrogen and the latter having only 1·7 per cent.

After continuing the experiment for thirty-seven years Dr. Voelcker reported (*Journal of the Royal Agricultural Society*, vol. 84) that practically no difference could be seen in the results. He said: "The consideration of these results and what they mean has given rise to much uncertainty, and it is not too much to say that no one has been able to provide any satisfactory explanation of what seems so contrary to general experience, nor has anyone—scientist or practical farmer—been able to make any useful suggestion as to the best way of tackling the problem. To myself, who have seen this carried on under my own eyes for thirty-seven years, I frankly say it has been insoluble." After stating that he vouches for the care with which the work

was done and the accuracy of the records, Dr. Voelcker expressed the view that the experiment was not altogether useless and adds: "The more recently modified opinions of agricultural chemists as regards unexhausted manure values tend to support the accuracy of the experiments."

One of the chief difficulties in the business management of a farm is the slowness of turnover. The expenditure is incurred on most products several months before they can be marketed. The interval varies greatly. In the case of winter-sown crops—such as wheat—it is generally a year and probably more between the sowing and the marketing, without reckoning the time spent on the preparation of the land for the crop. In Great Britain nearly all wheat, a large proportion of oats and some barley are winter-sown. In some other wheat-growing countries the interval between sowing and reaping is much shorter. In the Prairie Provinces of Canada, for example, the sowing of wheat is not general until the latter part of April, and harvesting is general by the end of August.

The subject of what is termed the "economic lag"—i.e. the interval between incurring the cost of production and realizing the product—was discussed by Mr. Dampier Whetham in the *Journal of the Royal Agricultural Society* for 1924, taking the accounts of two typical but diverse farms as the basis of his calculations. The result of the calculations for each of the two farms is shown in the following tables:

ECONOMIC LAG OF LIGHT LAND ARABLE FARM

Produce.	Percentage of Total Sales.	Normal Economic Lag.	"Weighted" Economic Lag.
		Months.	Months.
Wheat	7·2	13·6	0·98
Barley	42·4	14·3	6·06
Oats	2·0	14·5	0·29
Cattle	10·1	17·7	1·79
Milk	5·8	8·3	0·49
Sheep and wool . .	14·4	15·0	2·16
Pigs	5·0	8·6	0·43
Hay and straw . .	3·9	14·0	0·54
Mangolds, sugar-beet and sundries . .	9·2	11·2	1·03
	100·0		13·77

ECONOMIC LAG OF GRASS LAND DAIRY FARM

Produce.	Percentage of Total Sales.	Normal Economic Lag.	"Weighted" Economic Lag.
		Months.	Months.
Milk	66·0	7·65	5·05
Calves, etc. . . .	7·2	6·95	0·50
Cows	5·0	8·5	0·43
Fat pigs	14·8	3·9	0·58
Poultry and eggs . .	1·1	3·0	0·03
Corn	1·5	13·6	0·20
Estate work and sundries	4·4	5·0	0·22
	100·0		7·01

It will be seen that whereas on the arable farm there was a " lag " of nearly fourteen months, on the average of all products, before outlay was recouped, on the grass farm the interval was only seven months. The longest interval was in the case of cattle—nearly eighteen months—although as these represented no more than 10 per cent of the total sales the " weighted " lag—i.e. allowing for the relative importance of the products—brought into the general account of the farm was less than two months.

The financial effect of this " lag " on the farmer's business depends on the general course of prices. If the level of prices is rising it favours him, but in a time of falling prices it may prove disastrous. Under any circumstances it means that the farmer must " stand out of his money," as the phrase goes, for a considerable period and must be supplied with capital or credit to enable him to do so.

CHAPTER VII

FARM ACCOUNTS

THE neglect of farmers to keep accounts is traditional. It was so well recognized that in arranging for the collection of Income Tax a separate schedule was provided whereby occupiers of agricultural land were exempted from the obligation, falling on all other classes, of furnishing accounts, and were assessed on an arbitrary basis which assumed that the profits of a farm were equal to the rent. Farmers who were not satisfied with this assessment were given the option of producing accounts in the same way as others engaged in business, and being assessed on the basis of the actual profit, or loss, made by them. In the agricultural depression of the early "eighties," when farmers generally made heavy losses, many of them began to keep accounts with the object, primarily, of escaping what was in many cases an unfair assessment, and availing themselves of the option of being assessed on the financial result of their farming.

Other influences were also at work in the same direction. It came to be increasingly realized that farming is a business carried on, like other kinds of business, with the object of making a profit, and that

it must be conducted on business principles. As facilities for agricultural education increased, and agricultural colleges were multiplied, the necessity for keeping accounts was impressed on those who were trained at those institutions. Of the older generation some were ill-educated, and not infrequently these were amongst the most successful farmers. Many a flourishing farmer of fifty years ago kept no written account but his bank-book, and this well-known fact was sometimes cited as evidence that book-keeping was not necessary in farming. They were men of exceptional ability and shrewdness, but, successful as they were, it may be fairly assumed that they would have been still more successful if they had kept an exact record of all their transactions. It is to be remembered also that up to the latter part of the nineteenth century business was less complicated than now, and the cash transactions even of a large farm were comparatively few and simple. It may be added that farmers then, although proverbially "living well," had generally a lower or, at any rate, less expensive, standard of comfort than those of the present day, and were consequently less anxious about the details of their business. They did not appreciate the importance of "margins," which are now the basis of transactions in the commercial world, but their financial policy was summed up in the practical application of the Scottish proverb that "many a mickle make a muckle." In other words they parted with cash very reluctantly, and often pre-

ferred to pay a debt in kind or by contra-account than to disburse actual money. This habit, which was partly inherited from earlier times when farming was largely conducted on the principle of barter and monetary dealings were limited, often resulted in transactions which were really disadvantageous, but at the same time it fostered a carefulness in expenditure which is much less characteristic of the present generation.

For a short time during the war-period the basis of assessment under Schedule B (i.e. the farmers' schedule) of the Income Tax was raised to two years' rent. This again stimulated for a time the keeping of farm accounts.

Another reason for the reluctance to keep accounts is that farmers have, in many cases, an exaggerated idea of the difficulties of systematic book-keeping. To those who have not studied the subject it appears to be a mysterious art only to be acquired and practised by those who have either unusual ability or ample leisure. Strange as it may seem to a trained accountant the average man is apt to be puzzled by "impersonal" accounts and even confused by the terms "credit" and "debit" when he is told that the same transaction is a "credit" in one account, and a "debit" in another.

It must be confessed that in the past some of the attempts to give instruction in farm book-keeping have not presented the subject in a very attractive or readily understandable form.

As a matter of fact accounts which will show the

farmer year by year his financial position with an accuracy which he cannot secure in their absence are simple, and the keeping of them is well within the power of an intelligent schoolboy who has mastered the rules of arithmetic.

At the outset a little confusion is sometimes introduced by a failure to distinguish between "farm records" and "farm accounts." Of course all accounts are in the first instance "records," but all records are not "accounts"—i.e. they do not deal directly with financial transactions although they may be intimately connected with them.

It tends to simplify matters if we exclude "records," for example, of the milk yield of cows, of the number of eggs produced by hens, of dates of service, calving, lambing or farrowing, of the duration of haymaking and harvest, of the times of sowing, ploughing, etc. All these are farm "records" which should be systematically kept in a day-book or diary, but they are independent of, and not essential to, the keeping of accounts in a simple form.

There are two main questions which farm accounts are intended to answer, viz.:

1. What have been the receipts and expenditure on the farm during the year?
2. What is the financial position of the farmer at the end as compared with the beginning of the year?

Unless the accounts are so kept as to give definite and precise answers to these two questions they are worthless.

To answer the first question requires a Cash Book in which all payments made in respect of the farm and all money received for produce sold off the farm are entered consecutively at the dates at which the transactions occur. All the items in this book should properly represent actual receipts and expenditure, but to this rule there may be exceptions. On the receipts side a sum should be entered for the rent of the farmhouse, and the value of all produce of the farm consumed by the farmer and his family should also be entered on the same side of the account. On the expenditure side should be entered the value of " allowances," or payments in kind, to workers on the farm, such as milk, potatoes, or fuel, and the value of the board and lodging of any workers who live in the house. Strictly speaking, all such " paper " receipts and expenses should be cash transactions, and in that case the statement of accounts at the end of the year should agree with the banking account of the farmer.

It is, of course, possible to omit these " paper " entries, and it is indeed very common to do so. Their omission does not seriously affect the yearly statement of accounts provided that they are systematically dealt with in the same way each year, and the farmer realizes that the balance shown by the statement is affected by their omission.

Reference has been made to the " value " of produce consumed by the farmer's household, and this raises, incidentally, a question which is of fundamental importance in the keeping of farm accounts.

If it is considered in its simplest form it may be easier to grasp the principle involved. Take the case of a dozen eggs or a pound of butter which, instead of being sent to market or sold to a private customer, is consumed at home. The question is at what figure should they be valued for entry on the " receipts " side of the cash account? It is plausibly argued that they should be valued at the market price of the day on the ground that if they had been sold and not consumed that is the amount which would have been received for them. Of course, even by this argument, strictly speaking, not the market price but the farm price should be taken, i.e. the price which would be realized after paying costs of transport and sale. But the fallacy of the argument lies in the fact that the whole object of a record, whether it is concerned with money or not, is to state accurately what has been done, and not what might have been done. It would be just as logical to argue that if a number of beasts are sold at a certain date, and the price afterwards rises, that the entry in the cash book should be the sum which would have been received if they had been sold later.

The one thing essential in accounts is the strictest honesty. To value " paper " transactions at some hypothetical figure which is more favourable than the real figure is dishonest book-keeping. It is not only dishonest but stupid, because the person who is keeping the books for his own information is elaborately trying to deceive himself.

In the case we are considering of the eggs and the

butter the proper value to enter in the cash account is the cost price. Unfortunately this, in most cases, is not accurately known and can only be estimated. But if the principle is grasped it is better to fix a price on the basis of estimated cost than on a price which is based on fiction.

At the end of twelve months the receipts and payments should be summarized in some such form as the following :

Receipts.	Payments.
Live stock :	Rent
Cattle	Rates
Sheep	Insurance
Pigs	Labour
Horses	Wages
Poultry	Allowances
Dairy :	Seed
Milk	Feeding-stuffs
Butter	Fertilizers
Cheese	Live stock :
Corn :	Cattle
Wheat	Sheep
Barley	Pigs
Oats	Horses
Hay	Repairs
Straw	Other payments
Other receipts	

The actual items in the accounts will, of course, vary according to the system of farming adopted. The totals on each side of the account are made to balance by inserting on one side or the other the

item " Excess of receipts over payments " or " Excess of payments over receipts " as the case may be.

For the purpose of making this summary it is convenient to have a ledger in which all the items in the cash book are entered under the proper headings. This " posting " of the ledger can be done at leisure times and greatly facilitates the task of making up the accounts at the end of the year.

But the amount of money received and spent during the year does not necessarily represent the financial position of the farmer at the end. He may have deferred the payment of accounts properly belonging to the year or, on the other hand, sums may be due to him and not yet received. These are sometimes included in the cash account as " Debts due to the farm," or "Debts receivable," and "Accounts owing by the farm," or " Debts payable," but they more properly belong to an asset and liability account.

It is customary to include in a statement of farm accounts a valuation of the live and dead stock on the farm at the beginning and end of the year respectively. The effect of this is to mix up two distinct things—appreciation or depreciation of capital and actual ingoings and outgoings. It is true that the two things cannot be kept absolutely distinct. The cash account, for example, includes purchase of live stock or implements which increase capital and sales of live stock which reduce capital.

It should be said at this stage that a farmer beginning to keep accounts for the first time would be well advised to consult a professional accountant

with experience of farm accounts who would be able to advise him as to the form most suitable to the circumstances of the farm, and the nature of the business. There are many points on which expert opinion is not unanimous, and the conditions of farming are so varied that a form of accounts suitable for one farm may be unsuitable for another. What we are attempting here is not to prescribe a system of book-keeping but to explain generally the principles on which farm accounts may be kept in the least troublesome and most simple form.

Every farmer, whether he keeps accounts or not, must have a valuation which includes a more or less detailed inventory of the live and dead stock on the farm. This valuation is the basis of a "capital account" from which in turn a "profit and loss" account can be made up at the end of the year. The inventory should be as detailed as possible and should be entered in a book ruled with a series of columns for a number of years. This may be made clear by quoting examples given by Mr. C. S. Orwin in his book *Farm Accounts*, which he states are taken from actual accounts kept by tenant-farmers. Only a few of these given by him are quoted here as illustrations :

	1913.			1914.	1915.	1916.
Horses :	£	*s.*	*d.*			
Captain, br. g. .	32	10	0			
Charlie, br. g. .	12	0	0			
Grey mare . .	18	0	0			
3-year-old colt .	25	0	0			
2-year-old colt .	15	0	0			
and 10 other horses	134	0	0			

	1913. £	s.	d.	1914.	1915.	1916
Cattle :						
Cows in milk and in calf :						
No. 862 . .	15	10	0			
No. 863 . .	17	0	0			
No. 876 . .	17	0	0			
No. 868 . .	16	0	0			
and 42 other cows	670	10	0			
	£736	0	0			

Other stock are entered in such groups as may be convenient, but whatever grouping is adopted it is desirable to enter breeding stock separately. Implements, hay, straw and corn are entered in the same way. The valuation will also include such items as tillages, growing crops, unexhausted manures, etc., and lastly any fertilizers or feeding-stuffs in hand.

A " summary of valuation " made out in this way is given by Mr. Orwin in the following form :

SUMMARY OF VALUATION

	£	s.	d.	£	s.	d.
Horses				246	10	0
Cattle :						
Cows	736	0	0			
Bulls	27	0	0			
Heifers	30	0	0			
Calves	22	10	0			
				815	10	0
Poultry				72	3	0
Cultivation, etc. (giving details of crops or fields)				153	3	8
Stocks on hand :						
Foods	112	19	6			
Manures	56	13	4			
				169	12	10

	£	s.	d.	£	s.	d.
Implements :						
For Horse labour . . .	41	8	10			
„ Cattle	32	2	0			
„ Crops	92	12	6			
„ Poultry	30	18	0			
„ Dairy	185	14	2			
„ General use . . .	185	5	9			
				568	1	3
				£2,025	0	9

If farm accounts are started when the farm is taken, the valuation will have been made out at entry and the various items must be taken at the sums which appear therein. But at the end of the year it should be gone through and any additions or reductions recorded. The question then arises as to the sum to be entered against each item.

It is customary to value the live stock at the market price of the day, and this is obviously the easiest course. But it is desirable to consider carefully the precise object of the valuation in relation to the farm accounts as a whole. If the object was to ascertain what the farmer is " worth " on, say, December 31, or Lady Day, or any date to which the annual accounts are made up, if he " sold out " or was " sold up " on that date, it is evident that the prices current at that date should be taken. But this is not the object of the yearly valuation where the farm is to be regarded as a " going concern " and there is no question of ceasing business. The sole object of making up the annual

account is to ascertain as accurately as possible what has been the actual amount of profit, or loss, made during the year. By valuing at market prices a substantial profit or loss might appear in the accounts although no stock had been bought or sold during the year. By mixing up such "paper" profits or losses with real results in hard cash a misleading account is given of the year's transactions. It is quite true that appreciation of capital is "profit" and depreciation is "loss," but there is a marked distinction between profits and losses which have been actually realized and those which are realizable at the moment but may never materialize in the future.

The soundest principle of valuing the live and dead stock for the purpose of a "profit and loss" account is to enter every item at the beginning of the year at cost (as nearly as that can be ascertained) and to allow at the end of the year for increased or diminished value. Live stock kept through the year will, generally speaking, have increased in value except in the case of some of the older horses and milch cows. Of course purchases during the year will be added and sales deducted.

Implements and dead stock generally should be valued at cost, less depreciation year by year. The percentage allowed for depreciation must be a matter of judgment in each case, but as a general principle it is reasonable to make an estimate of the probable "life" of the particular implement or other article, and to deduct each year such a sum as will write off

the whole cost at the time when the article will no longer be of use. In practice, of course, the "life" varies greatly. A plough, for example, if kept in repair and good order, will be serviceable for an indefinite period, whereas a tractor, a self-binder, or a cream-separator may remain in serviceable condition for only a comparatively short time. Much, of course, depends on the care taken of the implements and machine, and for this reason alone it is impossible to lay down an arbitrary rule.

Whatever rate of depreciation is allowed, a time will come in the case of many articles when their value would appear in the books as "nil" while they would in fact be in servicable use. To avoid this absurdity it is desirable to fix a "limit of depreciation" and when that figure is reached to make no further deduction, but to carry forward the article from year to year at the same valuation. Mr. Orwin puts this very clearly: "A set of harrows may be worth 50*s.*, and it will be safe to give them a life of twenty years. This means that 2*s.* 6*d.* per annum must be deducted for depreciation, but if the harrows are kept in repair they will always have a certain value, say 10*s.*, so that after sixteen years, when the harrows will stand in the inventory at 10*s.*, no further depreciation need be allowed."

In recent years the advantage to farmers of adopting the principle of "cost-accounting" has been strongly advocated. The Institute for Research in Agricultural Economics has given special attention to this subject, and has done much

to explain and popularize it. In detail the subject is somewhat complicated and technical, and can only here be referred to in general terms. Those who wish to be fully informed about it should consult *The Determination of Farming Costs*, by Mr. C. S. Orwin, issued by the above Institute.

The practice of keeping accounts on the basis of cost analysis is now adopted in all industrial enterprises. Those who are responsible for them are not satisfied with a system of accounts which shows only the general results of their business. They may be making a profit on their turnover as a whole but a loss on some branch of it, and the stress of competition compels them to be constantly on the alert to maintain their position. For that purpose they need to know whether there is any leakage or waste in any department, and whether there may not be some departments in which losses occur which are hidden by the profit of other departments. The old haphazard theory that "what is lost on the swings is gained on the roundabouts" is inapplicable to modern conditions of business. Where only the general result of a business is known departments which are relatively unremunerative may be unduly fostered, and those which are more profitable may not receive adequate attention.

In no kind of business is it more easy than in farming for relatively unremunerative departments to exist, and remain undiscovered, and consequent waste and leakage to occur. The object of cost-accounting is to enable the farmer to

know what the actual cost is to him of each kind of product which he sells. That it involves a certain amount of trouble and time is undeniable, but judging from the experience of commercial men and also by that of farmers who have adopted it, the trouble and time are generally well repaid. Failing the adoption of the system it is usually possible to enlist the services of an Agricultural Economist to arrange for test cost-accounts at intervals.

CHAPTER VIII

THE LAW OF DIMINISHING RETURN

AGRICULTURAL production is subject to what is termed the "law of diminishing return." Much discussion has arisen on the subject and there is a good deal of misinterpretation or misapplication of the Law. A statement by the late Sir John Lawes that "high farming is no remedy for low prices" has been widely accepted by farmers, who have regarded it as expressing in plain language the economic law of diminishing return, to which it has only a partial relationship. Misunderstanding of the "Law" and a strained interpretation of Sir John Lawes's statement have together done mischief by inducing the belief that the only way for farmers to meet difficult times is to reduce the costs of production. It is unjustifiable to think that the law of diminishing return involves such a conclusion.

The principle on which the "Law" is based is so simple as to be obvious. It is clear that unlimited capital and labour cannot be profitably applied to a limited piece of land. Otherwise, instead of applying, say, £10 per acre to 100 acres, it would always be better and less troublesome to apply £100 per acre to a tenth part of the area—which is absurd.

But the case does not present itself practically in this crude form, and the manner in which the "Law" operates requires careful consideration.

In the first place it is desirable to state what the "Law" is. It is defined by Marshall in its simplest form as follows:

> An increase in the capital and labour applied in the cultivation of land causes *in general* a less than proportionate increase in the amount of produce raised unless it happens to coincide with an improvement in the arts of agriculture.

The standard example of the operation of the "Law," which has been repeatedly quoted and referred to, is the result of experiments made at Rothamsted to test the effect of increasing applications of nitrogen to the wheat crop. The experiments extended over a period of thirteen years. Five plots were set out, one receiving mineral manure alone, and each of the others an additional application of nitrogen. One "dose" of 43 lb. of nitrogen increased the yield by 10·3 bushels of grain; double the "dose" further increased it by 8·5 bushels, but the next "dose" added only 1·9 bushels, and the fourth only half a bushel. It is evident that the third and fourth doses did not pay, and that each successive application of manure gave a "diminishing return."

The failure of production, after a certain point, to respond to an increase of the factors of production is peculiar to Agriculture. In other forms of productive enterprise the judicious application of more

capital and labour gives at least a corresponding, and usually an increasing, return. A manufacturer having £50,000 invested in his factory who extends his premises and plant by the investment of another £50,000 expects to double his output and therewith his profits. Indeed he will reasonably expect that the second £50,000 will be more remunerative than the first. On this law of increasing return in industry the whole structure of modern industrial organization—the replacement by "large scale" enterprises of the small business, the extension of mass production—is based.

The law of increasing return, then, generally applies in industry and the law of diminishing return specially applies in agriculture. But the law of increasing return also applies in agriculture, and the question for the farmer to consider is when and where it ceases to apply and the law of diminishing return begins to operate. The question is often a difficult one, especially as the large majority of farmers do not know precisely what is the exact cost of producing a particular crop. It is possible to reckon what the cost of an additional application of manure would be, and to calculate whether the increased yield which might be expected in consequence would be sufficient at the current level of prices to make the extra dressing remunerative. But that does not settle the question. It may be that a change of seed, or some modification of the process of cultivation, might make the extra dose of fertilizer profitable.

It is commonly but fallaciously assumed that the law of diminishing return can be invoked to justify restriction of output. Even the conversion of arable land to grass is sometimes advocated or defended by an appeal to the "Law."

The "Law," in short, is not a sign-post; it is a warning. It is no guide to the farmer in the conduct of his business, it only cautions him against wasteful expenditure. Its application does not involve restriction of output, which, indeed, might often be increased by taking advantage of the resources which agricultural science places at the disposal of the farmer, by improved organization, and in some cases by the use of more capital.

To revert to the definition of the "Law," two points should be emphasized. It states that an increase in the application of capital and labour gives generally a *less than proportionate increase* of produce. This is, in fact, a truism, and in the nature of the case must be so because the crop is grown partly by the natural fertility of the soil.

The definition of the "Law" makes a reservation to the effect that it does not operate if "it happens to coincide with an improvement in the arts of agriculture." What the economist terms "the arts of agriculture" are improving every year. Chemical, botanical, biological, bacteriological, and physical science are continually increasing knowledge of soils, crops and animals, and giving to the farmer the means of increasing by improved methods the output from the land. These new resources

afford the means not of defeating the law of diminishing return, but of deferring its operation.

In a country such as Great Britain the economic future of farming depends on a more and more intensive use of the limited area of agricultural land available. In countries where land is plentiful the capital and labour applied to it may be, so to speak, spread out thinly, but in countries where land is scarce the aim must be so to concentrate effort and outlay as to make the most of the small area.

The law of diminishing return has been distorted into a bugbear, and while its validity is incontestable there is no reason for exaggerating its operation.

PART III

DISPOSAL OF PRODUCE

CHAPTER IX

METHODS OF DISPOSAL

THE simplest method by which the producer of agricultural products can dispose of them is to consume them in his own household. It is probable that if the total quantity of edible products which come from the soil were known it would be found that much the largest proportion is utilized in feeding those who produce them.

Even those who farm for subsistence, however, have usually some surplus products, while there are, of course, large numbers who farm for business and depend for their livelihood on the disposal of their products.

There are three methods by which products of the farm can be sold, viz. :

1. By direct sale to the consumer.
2. Through intermediaries.
3. By co-operative association.

Direct sale is the practice adopted mainly by the smaller producers and for what may be termed the

minor products. In countries where peasant cultivators and small-holders predominate, the market-place of the nearest town is filled with them on market days, each bringing his or her eggs, poultry, vegetables, fruit, and other produce. The thrifty French or Belgian housewife goes to market and bargains directly with the producer, and having secured what she requires takes it away in her capacious market-bag. In some English country towns, especially where small-holdings prevail in the district, a similar system prevails.

Producers on a larger scale sometimes adopt the same method by taking a shop, or a stall in the market, for the direct sale of their products. Still more common is the practice adopted by milk-selling farmers of establishing a " milk-round " for the direct sale of milk from the farm to the householder.

It is evident that by the method of direct sale, not only are there no intermediary charges, but the cost of distribution is reduced to a minimum.

The method of direct sale may also be adopted for certain products where the producer is at a distance from the consumer and cannot deliver the goods personally. This is possible by using the ordinary means of transportation and complying with such conditions as to size and weight as may be prescribed.

One objection to direct sale to distant customers is the risk of non-payment. To meet this a system has been adopted in some countries whereby the Post Office undertakes to collect payment for parcels

sent by post. This system has recently been adopted in Great Britain. By this system the value of a parcel, up to a maximum of £40, is collected from the addressee by the Post Office and remitted immediately to the sender. Parcels not exceeding £5 in value are delivered upon payment by the addressee to the postman of the amount to be collected. When the value exceeds £5 the addressee is required to pay the charges at the Post Office ; he may then take the parcel with him or have it delivered free of further charge. The fees charged by the Post Office for this service, in addition to the ordinary parcel postage rates, vary according to the amounts to be collected, which are termed " Trade Charges." The following is the scale :

Trade charge not exceeding	
10*s.*	4*d.*
£1	6*d.*
£2	8*d.*
£5	10*d.*
£10	1*s.*

and 2*d.* for each additional £5 or fraction of £5 up to the maximum of £40.

Sale through Intermediaries.—The sale of farm products through intermediaries is accomplished by a variety of methods and processes. There has been in Great Britain a marked tendency within the past half-century to lengthen the chain of intermediary agencies between the producer and the consumer in many of the main products of the farm. This is especially apparent in the case of live stock.

Fifty years ago it was almost the universal practice for the farmer himself to sell his fat stock to a butcher either on the farm or at a local market, and to sell his store stock either to a grazier in the neighbourhood or to a dealer who would take them to a market in some other district where they were more in demand. Now it is the general rule to consign the live stock to an auctioneer, who sells to the butchers or dealers as the case may be. No doubt sale by auction saves trouble and may save time, and, in theory at least, it ensures that the highest competitive price is obtained.

It is sometimes suggested that the widespread adoption by farmers of sale of live stock by auction instead of by personal bargaining arises from distrust of their own judgment. They are said to lack the self-confidence of their fathers and grandfathers. This may be the case, and it is, of course, evident that the average farmer has far less opportunity of becoming an expert judge of the value of stock than the butchers or dealers with whom he would have to bargain. It is generally agreed also that "an eye for a beast" is a natural aptitude or gift which cannot be completely acquired by training and experience.

It is remarkable that farmers generally have for so long declined to avail themselves of the advantage which they would gain by the adoption of the system of selling by live weight. In the United States the system is universally adopted and farmers are unable to understand the possibility of conduct-

ing their business in any other way. In Great Britain Sir John Lawes demonstrated fifty years ago that the most experienced farmers were often widely wrong in their judgment of the weight even of stock of their own breeding and feeding. He also demonstrated that butchers and dealers, with all their experience, were often wrong, though not so far wrong as farmers. Since then there have been countless demonstrations of the same fact, and indeed it is not seriously disputed that the weight of a live animal cannot be ascertained by guesswork however expert the guesser.

The reluctance of farmers to adopt the system of selling stock by live weight arises frequently from misunderstanding. Objection is sometimes taken on the ground that the weight takes no account of quality, by which the value is mainly determined. It would be equally reasonable to argue that it is not necessary to weigh cheese, or potatoes, or any other kind of produce because the price is determined by the quality. In selling a fat beast or sheep the vendor must have some idea of the quantity of beef or mutton he is offering before he can begin to estimate the value of the animal. All the scales do is to tell him the quantity accurately in the same way that they tell him the quantity of potatoes contained in a sack.

In the sale of corn there has been also an increasing tendency to sell to intermediaries. It was at one time usual in Great Britain for farmers to take one or more sacks of corn to the market and to sell

directly to the miller, maltster or horse-owner as the case might be. The method of selling by small sample has now become practically universal, and in the majority of cases the corn is sold to a merchant or dealer. The market for malting barley is exceptional and in some cases the grower sells direct to the representative of the brewer.

Milk is commonly sold under contract to a distributing firm, the contract being for six or twelve months. In recent years the terms and conditions of contracts have been discussed and arranged by a committee representing the National Farmers' Union and the principal distributing firms. Contracts usually provide for the delivery of a specified quantity daily, and in the spring and summer the farmer may have a surplus. This may be sent with the contract milk, and sold at the terminal station as " surplus " or " station " milk at a price varying according to the demand for it. In some districts milk is sold by farmers to a " factory " or collecting centre from whence it is sent to the distributing firms. In such cases the farmer makes his contract with the intermediary agency.

Potatoes are a crop which presents in itself an interesting illustration of the diversity of marketing arrangements. Its production, on a large commercial scale, is localized. In England the chief producing areas are Lincolnshire, Cambridgeshire, Yorkshire, Lancashire, Cheshire, Bedfordshire, and Cornwall. The most important area is that lying round the

Wash and comprising South-east Lincolnshire, North Cambridgeshire, the Isle of Ely, and the western part of Norfolk. In Scotland the chief potato-growing districts are Fifeshire, Perthshire, Forfarshire, Ayrshire, and the Lothians.

The producing areas, except Lancashire and Cheshire, are mainly at a considerable distance from the great consuming centres, and consequently growers are mostly dependent upon intermediaries for the disposal of their crop. A recent Report on the marketing of potatoes issued by the Ministry of Agriculture contains a detailed description of the various channels by which potatoes reach the consumer. There are, broadly, two classes of wholesale dealers or merchants. One class operates mainly in the producing areas, buying from the growers and arranging for dispatch to the consuming districts. They are in close touch with the producers and acquire an intimate knowledge of the quantity and quality of the crop. They collect the potatoes from the growers with whom they deal and dispatch them in consignments to the different consuming centres according to their requirements. The other class operates at the other end—in the consuming centres—and distribute the potatoes to the retailers.

In the great producing area of South-east Lincolnshire and North Cambridgeshire potatoes are so generally grown that every town is a wholesale market. There is a recognized place where transactions take place. This is usually in the open street. "Most of the farmers and merchants in

the immediate neighbourhood are to be found buying potatoes at Spalding, in the entrance of the White Hart on a Tuesday morning; at Peterborough in the street after the corn market, on a Tuesday, and after the cattle market on a Saturday, at Boston on a Wednesday, and at Wisbech on a Thursday or a Saturday." Farmers from within a radius of 15 to 20 miles, and merchants, attend these informal markets. Many of the larger growers are themselves merchants, and not only sell their own crops, which may amount to thousands of tons, but also buy from other growers and dispatch to merchants in the consuming centres. Some go a step further, and have stands in the wholesale distributive markets, thus getting in direct contact with the retailers.

In these country markets all business is done by personal bargaining. Most of the farms have a telephone, and before coming to market both farmers and merchants ascertain the previous day's prices in various markets, and also the tendency of the demand. Farmers and merchants then meet and discuss supplies and prices. No potatoes are, as a rule, in evidence, but sometimes the grower will bring a few pounds as a sample to show merchants.

The system is much the same in the other producing areas with the exception of Lancashire and Cheshire, where the proximity of great consuming centres enables much of the trade to be done between growers and retailers. In Liverpool, for example,

growers take their potatoes in two-ton lots to the market and sell them by the wagon-load or the bag to retailers. In the Ormskirk district there are commission agents at every railway station who are frequently also wholesale dealers, and buy the potatoes from the growers for distribution to the large towns.

The marketing of poultry and eggs has distinctive features, the chief being the general practice of collection from the farms by dealers, or as they are frequently termed, "higglers." The practice arose in England before railway communication was developed. In the Heathfield district of Sussex the rearing and fattening of poultry has been an established industry for generations, and in a Report to the Royal Agricultural Commission in 1894 it was stated that "long before the railway era the industry was of such importance that there was a regular service of four-horse waggons running three times a week to convey the dead poultry to London." The system of marketing appears to have originated from the circumstance that the fattening was a specialized industry undertaken by comparatively few, who could deal economically with a much larger number of fowls than they could rear and consequently obtained supplies from other poultry-keepers in the district. As a general rule the chickens are reared by one man and fattened by another. In a few cases the "fatter" also rears some chickens, but where the two branches of the industry are carried on by the same person

they are kept separate. Chickens are reared to a greater or less extent by almost everyone in the district from the large farmer to the cottager. The "fatters," who are also termed "higglers," collect chickens two or three times a week from a wide area. Each higgler has his own "connection" and as a rule takes the whole supply of each of those with whom he deals. In the old days the higglers commonly went on foot, carrying a kind of double-decked semi-circular cage on their backs in which to bring the fowls home, but the more modern practice is to make the round in light carts.

This system of farm to farm collection has spread to all parts of the country, and has been adopted extensively for the marketing of eggs. According to a Report of the Ministry of Agriculture the direct sale of eggs by producers to retailers is "probably the dominant method in this country," but the trade conducted through "higglers," and country dealers is considerable. The collectors or higglers call at the farms in a district with a cart or motor-van once or twice weekly, buy up all the eggs on offer and pay cash. They may buy on their own account for re-sale to country dealers or wholesale buyers, they may sell to retailers, or they may sell direct to consumers. Some collectors are employed by buyers on a weekly wage, and others on a commission basis.

Co-operative Marketing.—Under the co-operative system of the disposal of produce producers can collectively establish more direct relations with the

ultimate consumers than is possible, as a rule, when they are acting as individuals. They are also enabled as a co-operative association to organize the collection, sale and distribution of products so as to eliminate waste of energy and duplication of effort. The services now rendered by a multiplicity of agencies are for the most part necessary, but in many cases they are divided amongst an excessive number of persons and are unduly complicated and uneconomical.

The adoption of the principle of co-operative marketing is comparatively recent, but within the past fifty years it has made rapid progress in many countries. In Great Britain the Royal Agricultural Society in 1868 considered the question of adopting the co-operative factory method of cheese-making. The sale of milk had not at that time become so general among dairy farmers as it has since become by reason of the greatly increased demand and the consequent increase and organization of supplies. In the counties of Derby and Stafford milk was chiefly made into cheese, and the competition of imported cheese, mainly from the United States, led to a movement which was actively supported by Lord Vernon and other landowners, for the development of improved methods both of making and marketing. Two factories were established, at Derby and Longford respectively. They were in the first instance financed by a guarantee fund raised by landowners, but in the course of two or three years the farmers released the guarantors and

placed the factories on a co-operative basis. A number of other factories were erected, and one of them—at Hopedale—was started on the principle that farmers contributed capital on a *pro rata* scale according to the size of their milking herd. The factories encountered difficulties, largely caused by the hostility of some important cheese-factors. One of the early reports refers to the cost incurred in disposing of the cheese in distant markets " caused in some measure by the extraordinary and unexpected jealousy and dislike with which the movement is viewed by some factors of considerable influence in the trade." From this and other causes many of the factories failed, the movement was checked, and it was not until nearly thirty years later that co-operative marketing was again seriously considered by farmers.

The English Agricultural Organization Society actively promoted the formation of co-operative marketing associations which, in twenty years, had so far developed as to represent a turnover of nearly £7,000,000. In 1924, however, the Society was wound up owing to financial difficulties and its functions were undertaken by the National Farmers' Union. In a report of the Ministry of Agriculture which comprises a brief summary of the history of the movement, it is stated that in deciding to wind up the society " the governors were influenced by the growth in importance of the National Farmers' Union, which commanded the support of the general body of farmers throughout the country. It was

felt that, in existing circumstances, there was no room for any other central body such as the Agricultural Organization Society. The view was accepted that co-operation must be a farmers' movement, a movement by farmers for farmers, and that it must spring from within and not be imposed from without."

The number and turnover of agricultural co-operative marketing societies of various kinds in England and Wales in 1923–24 are shown in the following table :

Commodity Handled.	No. of Societies.	Turnover.
		£
Dairy produce	63	1,447,627
Eggs and poultry	43	349,262
Fruit and vegetables . . .	18	301,932
Live stock	9	375,128
Auction marts (live stock) .	18	1,081,953
Slaughterhouses	11	415,270
Bacon factories	6	694,826
Wool	13	200,000
	181	£4,865,998

In the United States co-operative marketing first developed in connection with the produce of the Pacific States. It is significant that distance from markets was chiefly the cause of the organization of co-operative associations.

In 1893 a meeting of orange-growers was held at

Los Angeles, and a co-operative marketing association was formed which operated for two seasons. Difficulties and dissensions arose, but in 1895 the Southern California Fruit Exchange was incorporated, which may be regarded as having established the co-operative marketing of citrus fruit on a firm basis. It gradually extended its operation until in 1903 it controlled about 43 per cent of the consignments of citrus fruit from California. It further enlarged its scope and, as the California Fruit Exchange, is now probably the most famous farmers' co-operative association in the world. In 1923 it handled 76 per cent of the total trade of the State in citrus fruit—i.e. oranges, lemons and grape fruit—and its sales amounted to £1,000,000.

The number of co-operative marketing associations in the United States with their estimated membership and amount of business were as shown in the table on page 177, compiled from a *Report on large-scale Co-operative Marketing in the United States* by the Ministry of Agriculture.

Denmark has developed her system of Agriculture and organized a large export trade in butter, bacon and eggs on co-operative principles. The milk of 83 per cent of the total number of cows in the country is marketed through co-operative creameries; 85 per cent of the pigs produced are marketed through co-operative bacon factories; and the co-operative egg export society handles 50 per cent of the eggs produced.

Kind of Association.	No. reporting in 1924.	Estimated Membership April, 1924.	Estimated Business 1923.
			£
Cotton	107	250,000	20,000,000
Dairy products . .	1,966	200,000	80,000,000
Fruit and vegetables	1,232	200,000	60,000,000
Grain	3,134	400,000	120,000,000
Live stock . . .	1,598	250,000	50,000,000
Nuts	51	50,000	10,000,000
Poultry and poultry products . . .	56	15,000	10,000,000
Tobacco	25	290,000	30,000,000
Wool	115	50,000	4,000,000
Miscellaneous selling	729	70,000	32,000,000
	9,013	1,775,000	£416,000,000

In Canada co-operative marketing has been adopted for many kinds of farm products. There are about 800 agricultural co-operative associations in the Dominion for various purposes, but the most characteristic development is in connection with the marketing of Canada's greatest product—wheat. The farmers in the three Prairie Provinces—Manitoba, Saskatchewan and Alberta—have formed a co-operative organization known as the Wheat Pool. The members, who represent two-thirds of the wheat acreage of the three provinces, bind themselves to sell all their wheat through the Pool, the executive committee of which are elected by them, and act through a salaried staff. The principle of

the scheme is the elimination of intermediary profits. The case was thus stated in the official organ of the Pool: "Under the old system the farmer sold his grain to the Middleman or grain companies, they in turn sold it to the miller or ultimate consumer. Every business concern handling grain between the producer and the consumer has one purpose—that of making profit for themselves. Through the Pool the farmer is putting his wheat on the market not with the intention of earning dividends out of the business, but with the idea of handling his grain at cost and getting for it full market value. In the Pool there are no shares (excepting the one dollar share necessary to comply with the Companies Act) and consequently no dividends are earned or paid. He is marketing his grain on the non-profit basis, and therein lies the fundamental difference between the pool or the co-operative marketing method, and the ordinary commercial or business method."

In an undertaking of this magnitude it is possible to engage the services of a competent expert, and to take advantage of all facilities for securing the most trustworthy information as to the probable course of the markets. Farmers individually are comparatively helpless, but collectively they can secure a strong position on the world's markets.

The establishment by Australian producers of an organization known as the Overseas Farmers' Co-operative Federation in Great Britain is another example of marketing on a large scale. The

organization undertakes to sell any type of produce on behalf of the co-operative associations in Australia. No contracts are made, and consequently producers are free to market their products in the way they think best. Wheat-growers can either pool their wheat and thus secure an average seasonal price, or warehouse and sell it independently. If they warehouse the wheat it can either be sold at once, or it can be stored, a warehouse receipt for it being negotiable as security to a bank for an advance.

In many other countries co-operative marketing is largely and increasingly adopted. In its application it varies greatly according to the agricultural conditions of the country and the economic status of the producers. But generally there has been in recent years, where the field of action warrants it, a marked tendency towards " large scale " business. This is especially the case where the commodity dealt in is produced from an extensive area and its principal market is far off. For local markets the small co-operative association is suitable, but for distant markets involving large commercial operations, a powerful organization, numerically and financially, is essential.

The general principle on which co-operation for the disposal of farm products is based is that producers band themselves together in a trading association for the purpose of marketing their produce collectively instead of individually. Unless they are convinced that this will be, in the long run,

if not immediately, to their advantage, they will be well advised to leave co-operation alone, and to continue to dispose of their products individually. The failure of many co-operative associations is due to the fact that the members are half-hearted, or rather that they think they can combine collective and individual marketing, choosing one or the other method according to circumstances. To attempt to conduct a business enterprise on these lines is futile. It is much the same as if a tradesman should open a shop and instead of stocking it should only sell such articles as customers promised to buy. If collective marketing is worth trying, the risk of the business must be accepted. The producers must guarantee the supply, by each entering into a binding contract to send regularly a definite quantity to be sold through the association. It is obvious that the association cannot trade profitably—or indeed at all—unless it can be certain of delivering the goods it sells, and can enter into contracts with the surety of being able to carry them out.

On the adoption of this fundamental principle successful co-operative marketing depends. This accounts largely for the fact, which appears on the face of it puzzling, that farmers in one country or district adopt co-operative marketing eagerly while in other places it is very difficult to convince them of its advantage. Their willingness or unwillingness depends largely on the existence of alternative markets. Where there is practically only one outlet for the produce of a country or a district, when all

the producers must send to the same market, it is easy to see the advantage of " pooling " the produce. But where, as is frequently the case in Great Britain, the producer is near several markets and can often, at a particular time, make a better price in one than in another, he is, not unnaturally, reluctant to tie himself to one outlet only and abandon the chances of an alternative market. In such cases it is only by taking a long view that the farmer can see any economic advantage in co-operative marketing.

CHAPTER X

MARKETS AND MARKETING

THE word "marketing" as used in the last chapter, is practically synonymous with "selling," and commodities are commonly said to be "marketed" when they are disposed of at any time and in any place to a buyer.

But the word "market" implies a particular location specially provided, or generally recognized, where buyers and sellers regularly meet to transact business. It may be merely a spot or area in the open street, or it may be an elaborately equipped building such as the Corn Exchange in Liverpool, or the Baltic in London. A market may be started in an open field, usually near a railway station, for the sale of live stock or other produce by auction, and this is commonly known as an "auction mart."

Although in general terms it may be said that there is now nothing to hinder the establishment of a "market" for the convenience of buyers and sellers, there are, in an old country such as England, restrictions applicable in many places, including all older towns, which are only intelligible in the light of history.

The modern market is directly descended from

the mediæval fair, which was in fact a large market held at infrequent intervals—commonly once a year—and extending over several days. The word "fair" signifies a gathering at one of the religious festivals, being derived from *feria*, which is the ecclesiastical term for a saint's day. These feasts were often a continuation of still older pagan festivals which, from the earliest times, were occasions for trading as well as for religious exercises and pleasure. After the Norman Conquest the native British fair seems to have been reconstituted on the Continental model, and it was recognized as a valuable source of revenue to the Crown. As foreign trade developed, the annual fairs rose into commercial importance, but as means of communication improved, they were gradually replaced by markets held at more frequent intervals and dissociated from the revelry and pleasure-making which had obscured the business side of the old fairs.

The English market system grew up by means of Royal Grants. Generally a market was established by soliciting and obtaining a concession from the Crown of the "franchise" or privilege. This prerogative of the Crown dates from very early times, and the right of holding markets and of granting the right to a subject was claimed and exercised by Saxon Kings. In England the grant was always made to an individual; even when it was exercised by a corporation it was, in theory, independent of the ordinary municipal privileges. In Scotland, on

the other hand, the right of market appears as one of the ordinary privileges of a town.

No complete survey has been made since that undertaken by the Royal Commission on Market Rights and Tolls forty years ago, but at that time there were in England and Wales 769 markets, of which 261 were in boroughs, 266 in other urban districts and 242 in rural districts. Local authorities were the owners of 313, private persons of 274, and companies of 103. In 57 places the right to hold a market existed but was not exercised, and in the case of 22 a market was held but the authority to do so was questionable.

The object of restricting and regulating markets was to ensure fair dealing and prevent chicanery and fraud. The market assured publicity, so that there were witnesses to the transfer of property. The idea that only persons of special credibility and established position could attest sales ran through the enactments. One of the advantages of the establishment of markets was that a sale in "market overt," i.e. in the presence either of a duly appointed official or of two or three "credible witnesses," gave a buyer a title against all comers. In a private sale the vendor could give no better title than he himself possessed, and the purchaser would be compelled to restore the goods to anyone who proved to have a better title; but by sale in "market overt" the purchaser acquired a good title in the absence of direct fraud. Thus, if a man stole a bullock and sold it in "market overt," the buyer could hold it

against any claimant, though there was a curious exception to this rule in the case of horses, which did not come within the law of "market overt." To constitute a sale in "market overt" the goods sold must be actually in the market during the whole of the transaction.

The grant of the privilege to establish a market included generally the right to charge for its use, although, strictly, tolls were not incident to a market without a special grant. In practice, however, the owners of a market could always make their own conditions. In many produce markets tolls were taken in kind, and even forty years ago the practice survived in some places. In one town one egg from every thirty was taken, in another a pint of corn from every sack. These and other antiquated practices have gradually died out, and in most markets the system of a money toll on the quantity of produce has been replaced by that of charging stallage, or rent, for space occupied. For live stock, however, the toll is usually charged per head, or in the case of sheep and pigs, per score.

In some market towns the inhabitants, freemen or burgesses have certain privileges in regard to the market charges. The special exemption of certain kinds of produce was not unusual. In some towns butter and eggs are toll-free by custom.

In some countries every town of importance collects a toll on all produce entering the town. This, which is known in France as *octroi*, is in the nature of a local customs duty. A corresponding

system existed in some English towns, a toll being levied on all goods, cattle, carts, etc., passing into the town.

Under modern conditions of trading local markets for farm products have lost much of their old-time importance. Buying and selling are largely done by correspondence and frequently by contract. Except in the case of live stock and some of the minor products sold directly by the producers, it is unusual for goods to be actually taken to market. Sale in "market overt," once the basis of trading, is now little more than a legal tradition.

While at one end of the scale there is a tendency to eliminate the market as a place where buyers and sellers must meet, at the other end of the scale there is a tendency to elaborate it. The great Produce Exchanges are a recent development arising out of the increasing complexity of modern commerce. They are established in connection with products for which there is a constant demand spread over a wide area, and in which, consequently, there is international trading. Of such products wheat is the chief, and a brief consideration of the conditions affecting its sale and distribution will explain the process of marketing on the largest scale.

Wheat is grown more or less extensively in many countries of the world, and it forms the staple food of the white races. The supply comes from widely separated sources, and is irregular, being dependent in every producing country on the date of the harvest and on the amount of the crop, which varies, on the

same area, from year to year. The demand is very regular, all wheat-eating peoples requiring a daily supply of practically equal quantity all the year round.

As wheat is not consumed in its raw state it cannot be sold direct by the producer to the consumer. It has to go through the process of manufacture into flour, which is undertaken by a miller. Direct sale by the grower means, therefore, sale to a miller, who in turn sells flour to a baker, by whom bread is supplied to the actual consumer. In its simplest form, therefore, the marketing of wheat for human food involves two intermediary processes of manufacture before it reaches the consumer. Where the crop is consumed in the locality of its production its delivery from the farm to the mill may be made by the farmer himself, but otherwise the services of a transport agency such as a railway or canal are necessary. There still remains the difficulty of adjusting supplies to demand. If the country is self-supporting and neither imports nor exports wheat, the crop must be spread evenly over the twelve months. This means that wheat must be held and stored for a considerable period. The grower may keep it in a stack, or, after thrashing, in a granary. This was in England at one time the general practice, and deliveries were made by farmers to millers as supplies were required. The practice has, however, to a large extent, died out, and few English farmers now hold wheat either in stack or in store for longer than six months, and in many cases

farmers sell and deliver all their wheat before Christmas. On the other hand it is no part of the business of milling to store large quantities of wheat. In planning and constructing a flour-mill, accommodation is provided for the storage of a sufficient quantity of wheat to ensure that the milling plant may not be liable to stoppage for want of supplies. The amount of accommodation is calculated with reference firstly to the size of the plant, in other words to the daily output of flour, and secondly to the regularity and reliability of transport. A mill situated in a locality where the means of transportation are difficult, and regularity of supplies is uncertain, would need to hold a proportionately larger reserve of wheat than a mill more favourably placed. In England it is commonly reckoned that a miller can so far rely on regularity of delivery that he will be safe from risk of stoppage if he holds from four to six weeks supply of wheat at the mill.

It is evident that between the farmer who is unable or unwilling to store his wheat, and the miller who cannot take delivery of more than a limited quantity, there is a gap which must be filled by some intermediary agency. The corn merchant forms the link. It is his function to buy wheat from the grower, collect and store it, and distribute it to the millers as they need it. He also conditions and grades the wheat from a number of growers, and is able thereby to meet the different requirements of his customers. In some countries this service is undertaken by " elevator " companies. In Canada

and the United States an elevator or store-house is erected within carting distance of the growers, and usually on the railway. The farmer takes his wheat to the elevator and can either sell it outright or entrust it to the elevator company for sale on commission. In some countries, such as India, the collection of wheat by the corn merchant involves the maintenance of a special organization for that purpose in the wheat-growing districts.

The procedure by which wheat produced in one country is regularly conveyed to consumers in another country thousands of miles distant is more complicated than when the trade is local. The international trade in wheat involves the transfer from one country to another of some 16,000,000 tons every year. This has all to be collected at seaports and shipped to other seaports and the time and quantity of every shipment have to be arranged long in advance so that the vessels may be available at the required time and place. In each case the capacity of the ports both of dispatch and discharge has to be taken into account, and the shipments regulated accordingly. The chief wheat-exporting countries are Canada, Argentina, the United States, India and Australia. Russia was also a large exporter before the war, and after an interval of about ten years has begun again to take a place amongst them. The chief wheat-importing countries are Great Britain, Italy, Germany, Belgium, Japan, France, Holland and Switzerland, which collectively take nine-tenths of the supply.

In all importing countries the quantity of wheat required from other countries varies more or less from year to year as the home harvest is plentiful or scanty. The surplus available in exporting countries is subject to yearly fluctuation from the same cause. To these variations the trade must adjust itself and the regularity with which supplies come forward is remarkable. An analysis of the total shipments of wheat for the years 1905–13 showed that the proportions in three-monthly periods were: September–November, 28·4 per cent; December–February, 23·4 per cent; March–May, 25·4 per cent; June–August, 23·7 per cent.

The following statement published by the Manitoba Wheat Pool of the charges on wheat from Saskatchewan to Liverpool gives an idea of the various stages in its progress from Western Canada to a port granary or mill in Great Britain:

	Cents per bushel.
Country elevator	1¾
Commissions on shipment from country	1
Average rail rate, taking Saskatchewan as a basis	12
Weighing and inspection in and out, including lake shipper's charges	¼
Terminal handling	1¼
Cash grain brokerage, double charge	⅛
Vessel brokerage, say	⅛
C.I.F. and F.O.B. brokerage	¼
Lake freight to Montreal, say	11
Lake insurance to Montreal	¼
Brokerage and elevation to sea board	⅜
Shipper's profit to seaboard, say	⅜

	Cents per bushel.
Ocean freight from Montreal to Liverpool	9
Ocean insurance, say	$\frac{1}{2}$
Outturn insurance, say	$\frac{1}{2}$
Exporter's profit, say	$\frac{5}{8}$
Brokerage at Liverpool, varies about	$\frac{3}{4}$
Unloading at Liverpool and other charges	1
Interest and brokerage	$\frac{3}{4}$

It is claimed that some of these charges are saved by co-operative marketing and that the total saving amounts to about 3 cents per bushel. But the services set out have to be performed in any case, and the list indicates the complexity of the marketing organization required.

There are a few corn merchants engaged in the international trade who themselves undertake the whole of the services required to bring the wheat from the growers in one country to the millers in another, but a great part of the trade is conducted through a series of intermediaries.

It is apparent that the smooth working of the international trade depends mainly on the foresight of those engaged in it, who must make their arrangements long in advance of the actual shipment of the wheat. An importing merchant or miller must so place his orders with shippers in exporting countries as to ensure that supplies will reach him successively at such dates and in such quantities as he will need them for the regularity of his business. It is true that there is usually a certain quantity of wheat already shipped "for orders," i.e. without

having been sold, and this can be bought to meet an unexpected shortage, but the merchant or miller resorts to this only occasionally when his prearranged supplies prove, for some reason or other, to be insufficient for his immediate requirements. Normally the importing merchant or miller buys a long way ahead for shipment in successive months. Thus he may buy in December for shipment in April, in January for shipment in May, and so on.

On the basis of this characteristic feature of the international grain trade, the great international markets have been established. These are so organized that the buying and selling of wheat, for example, can be conducted on a large scale and sales can be effected either for immediate or future delivery. What are termed " futures " markets are few, those at Chicago, Liverpool, and Winnipeg, being the most important for wheat.

A deal in " futures " is a transaction which provides the opportunity for those engaged in the large operations by which the international trade is carried on to insure against, or at any rate greatly reduce, the financial risks which are necessarily involved. A merchant who has contracted for the purchase of a quantity of wheat to be delivered, for example, in May, can at once sell it on the " futures " market at the price quoted for deliveries in that month. The sale is duly registered, and when the time comes the buyer can demand actual delivery. But if it were compulsory for the buyer to take

delivery the chance of the seller effecting a sale would be very limited. As a rule the buyer has no desire to obtain the actual wheat, but when the time comes, pays and receives the difference by which the official price may have risen or fallen since the sale was made. If the seller has to pay the difference he is recouped by the higher price of the wheat, while if the price has fallen, and his wheat is worth less, he is recouped his loss by the buyer of the " future." The system is thus one of insurance, and while it is true that it is a form of speculation it is only that form which is an essential element of all business transactions in which a trader buys a commodity in the hope of selling it at a higher price at some future time.

The system of dealing in " futures " has frequently been attacked as a form of gambling. It has also been described on the one hand as tending to depress the level of prices and thereby injure the producers, and on the other hand as tending to raise prices and thereby injure the consumers. Careful investigation has proved that on the whole the system tends to steady the course of prices and prevent violent fluctuations. Commodities of a similar kind for which there is no " futures " market are subject to more violent fluctuations in price. There is no doubt that the system is open to abuse and facilitates the manipulation of the market by unscrupulous persons. Public attention is sometimes arrested by a sudden and sensational rise or fall in the price of wheat, which is attributed, often rightly, to the operation of an

individual or a group of individuals, and the existence of the "futures" market is assumed to be the cause of their action. But, in fact, such a "raid" on prices is engineered by more subtle means. The real basis of the world's price of wheat at any time is not the actual relation at that time of immediate supplies to immediate demand (as is the case with many commodities), but the prospects of supplies during the next few months. In the nature of the case those prospects are uncertain, depending as they do on the ultimate result of crops still growing or even not yet sown. Every merchant has to form his own judgment from such information as he can obtain, and inasmuch as the success or failure of his trading depends on the accuracy of his judgment he is very sensitive to any report or rumour affecting the prospect of future supplies. To manipulate the market, therefore, the operator contrives to gain credence for some report, either wholly untrue or much exaggerated, that supplies will be either greater or less than has been generally believed. This induces heavy buying and selling, as the case may be, by those who believe the report, and those who are responsible for it are able to profit accordingly.

The effect of such gambling as this is, usually, restricted and temporary. Reaction follows quickly and the course of prices is deflected probably for not more than a few days. A number of corn merchants and speculators make or lose money, but neither producers nor consumers are seriously affected.

Although, therefore, the existence of a "futures" market is not on the whole detrimental to the interests of producers and consumers, but advantageous to them, the fact that the system is open to serious abuse by unscrupulous persons necessitates its strict regulation.

The Produce Exchanges are owned and controlled by private organizations. At Chicago, for example, the Board of Trade, a body of merchants and others, controls the Exchange, regulates the conditions of trading, standardizes terms of contract and provides for arbitration in disputes.

International trading in wheat has led to the adoption of an elaborate system of grading. This has reached its highest development in Canada, where it is regulated by the Canadian Grain Act, under which a Grain Standards Board is constituted. Wheat is graded by Government inspection and sold on grade certificates. The four highest grades are specified in the Act, but there are three lower or "commercial" grades which are dependent on seasonal conditions and are defined each year by the Grain Standards Board. The grade is determined by the degree of purity, cleanness, soundness, weight, condition and milling qualities as indicated by the degree of hardness. The Grain Standards Board is assisted in defining the commercial grades by a Government Grain Research Laboratory, which investigates the milling and baking qualities of the wheat and examines any special problems arising from seasonal conditions.

In the marketing of cattle the system is much the same whatever the size of the market. The largest market in the world is that of Chicago, where practically all the animals—cattle, sheep, and pigs —are brought for immediate slaughter, and the market is in effect a collecting place for the supply of the great "packing" firms attached to it. In England the largest market is that of Smithfield in London, to which cattle are brought, mainly by dealers, from all parts of the country, and sold to butchers who either slaughter them in the slaughter-houses attached to the market, or in their own slaughter-houses. The system is practically the same as that of the smaller country markets. Certain markets, of which in England Norwich is the largest, are mainly devoted to store cattle, which are collected by dealers from the stock-raising districts and sold to farmers and graziers for fattening.

Wholesale marketing of butter is most highly organized where the producing country largely exports the product. In Denmark the butter is made, blended, graded and packed in the co-operative creameries throughout the country and forwarded to collecting depots at the port of shipment. A similar system is adopted in New Zealand, Canada and Ireland. Some years ago Normandy and Brittany were the chief source of oversea supply to the British markets and the system there adopted was peculiar. The butter was brought by the farmers in large crocks or jars into a market held

on certain days in the streets of a country town. It was there bought by representatives of " blending houses " in the town, each lot being separately bargained for, and the price arranged according to its quality. All the lots were taken to the blending house where they were roughly sorted in two or three grades, and blended by machinery into a uniform product. The butter was then packed in tubs and consigned to the London market.

In the United States, where butter is produced for home consumption, the most important wholesale markets are at Chicago, New York, and Boston. In these markets the butter is mostly purchased in the first instance by a wholesale receiver who collects it from the producing districts. Formerly the butter was usually consigned to be sold on commission, but it is now generally bought outright. Dr. L. C. Gray (*Introduction to Agricultural Economics*), describes the business of the wholesale receiver as follows :

> The wholesale receiver performs a number of important functions. Because of his large business he is able to purchase in car load lots. His general knowledge of conditions of supply and demand in a large city and adjacent territory enables him to bid accurately for the butter supply. If he finds the market overstocked he may purchase less or divert some of the supply purchased to other cities, thus assisting in adjusting supply and demand. The wholesale distributor grades the butter received, and distributes it according to the quality that will be demanded by different classes of customers. He also finances the movement of butter by paying transportation and other expenses and by allowing creameries to draw on him for

payment on day of shipment. Finally the wholesaler assumes the function of storing butter in seasons when it is cheap and abundant to be held until it is scarce, thus assisting in equalizing the supply throughout the year.

The marketing of dead meat is a comparatively simple process where it is the product of animals fattened and killed in the country of production, but the organization becomes complicated when the meat is produced in one country and consumed in another. The development of the international trade in dead meat began with the invention of a system of refrigeration which enabled fresh meat to be preserved without deterioration for long periods. The trade was started in the latter part of the last century in the United States, which had already established a large export trade in " canned " meat. That country has practically ceased to export owing to the increased home demand, and the chief exporting countries are now Argentina, Australia, New Zealand and Uruguay. Great Britain is much the largest importing country, and until recent years was almost the only market. Since the war, however, other European countries have begun to import beef.

The pivot of the export trade is the freezing-house, usually located at a port, to which the stock are sent either direct from the farms or through a local sale-yard. On reaching the works the stock, after being rested in the paddocks for a short time, are slaughtered, and the dressed carcasses pass to a cooling chamber where they hang for twenty-four

hours. All animals are examined before and after slaughter by Government Inspectors, and to every carcass passed by them a certificate is attached which remains on it until it reaches the market. The meat is either " chilled " or " frozen." " Chilling " means that the meat is cooled to a temperature slightly above freezing point and must be consumed within five or six weeks of slaughter. The process is only applied to beef from South America. " Frozen " meat is beef or mutton which is actually frozen and can be kept almost indefinitely so long as it is not placed in a temperature above freezing point.

The Australian and New Zealand meat trade is carried on by several classes of traders, who are thus described in a Report issued by the Ministry of Agriculture and Fisheries :

1. British firms owning works in the Dominions and possessing their own selling organization or wholesale Depots in this country.
2. Dominion firms owning works, with agencies in this country.
3. Farmers' co-operative works in the Dominions, having agents in this country.
4. Operators in both countries who do not own works.

The organization of the South American trade differs from that of the Dominions in that it is linked with a distributive system in Great Britain. Few of the Australian or New Zealand companies have market stalls or depots, while the South American

companies have a net-work of shops or stores throughout the country. Consequently the South American companies sell direct to the retailer or the consumer, and are independent of intermediary agencies.

The wholesale meat trade of London is concentrated at Smithfield Market (distinct from and unconnected with Smithfield Cattle Market previously mentioned), which is the greatest dead meat market in the world. It is the property of the City of London, from whom stall-holders rent their stalls or shops. The stalls are held by various classes of salesmen, though sales from the stalls are only made to butchers or to large buyers such as restaurant or hotel proprietors. Some are held by salesmen who deal only in home-killed meat, which has been bought on their own account or consigned to them for sale on commission. As only 17 per cent of the meat coming to this market is home-killed, it is of secondary importance. Some stall-holders sell both home-grown and imported meat, and in the latter case may sell on commission, or they may be jobbers. Stall-holding jobbers are salesmen who usually buy on their own account for immediate sale. Other stalls are held by jobbers who deal in imported meat only. They buy from the importing firms in fairly large quantities and sell in smaller lots to retailers. Stalls are also held by the American, and some of the Australian, importing firms for the sale of their own meat, although the Australian firms, owing to

the seasonal nature of their own supplies, usually deal also in meat from other sources.

So far as the stall-holders' activities are concerned Smithfield is only a wholesale meat market similar to other meat markets, but on a larger scale, and with a greater preponderance of imported supplies. "Smithfield is, however," to quote the Report above cited, "much more than a wholesale market; it also functions as an exchange where the merchandise sold is mainly titular, i.e. drafts on goods lying in cold store, on ships in the docks or at sea, the transactions being limited to ex-store, ex-ship and c.i.f. dealings in frozen supplies." Engaged in the business are specialist merchants, and it is to them that Smithfield owes its prestige throughout the meat-producing regions of the world. "The head offices of the great meat firms and of the agents and jobbers are close to Smithfield, which is the common meeting place for all concerned in the trade. The market itself closes at one o'clock, when the stall-holders, who have been at work since the early hours of the morning, go home. The extra-market merchants return, however, to their offices near at hand, where their work is continued by telephone and cable, their arena being the whole international field in which meat is bought and sold."

The application of refrigeration to commercial requirements not only made long-distance transportation of perishable articles possible, but it also established cold storage as an essential element in

the international trade in such products. The power of keeping stocks of meat, butter, poultry, fruit, vegetables, and similar goods is an important factor in wholesale marketing. Fairly and legitimately used it helps to regularize supplies and to prevent violent fluctuations in price due to an unexpected glut or shortage. The power may be misused, especially so long as it is possible for those who hold stocks in cold storage to conceal the extent of their holdings, but there is no reason to believe that it is in fact normally used improperly. The principal cold stores in Great Britain are situated at the ports, but there are also a few at inland towns. The total collective capacity is about 40 million cubic feet, and some 45 per cent of this is in London.

It will be seen that the commercial organization and procedure by which large-scale marketing is carried on is different for different products, but a description of the system adopted in the case of one or two commodities gives a general idea of the whole.

Whatever may be the particular kind of organization adopted there are certain services which are generally essential in all large-scale marketing. They may be briefly summarized as follows:

1. Delivery from the farm to a convenient collecting centre.
2. Sorting, grading and packing.
3. Temporary storage until time of dispatch.
4. Transportation to market.
5. Temporary storage until time of sale and delivery.

6. Sale, if not effected before dispatch.
7. Delivery to buyer.
8. Insurance until ownership is transferred.
9. Distribution to consumer.

The actual process is subject to modification in many respects. It may be simplified, and on the other hand it may be extended by the introduction of other intermediary agencies. But this list indicates generally the successive stages between points of production and consumption.

CHAPTER XI

PRICES

THE price of any commodity is fixed, to use the old phrase, by "the higgling of the market." To the average farmer who sells his own stock or produce this appears obvious, and he prides himself, often justly, on his personal skill in making a bargain. The battle of wits between the seller and buyer to be observed on any market day in a French country town displays the tactics of bargaining at their best, although in the old days the chaffering of a farmer with a butcher in an English cattle market about the price of a bullock, often prolonged over the greater part of the day, was perhaps even a higher example of the art. When both parties are equally determined to carry out the transaction and each knows the determination of the other, agreement on a price is a matter of patience as well as of persistent "bluffing." In such a case it appears quite evident to both parties that the price is eventually fixed by the "higgling of the market" and by no other influence, and it would surprise them to learn that they are in fact dominated by economic laws of which they have never heard.

Price, in the language of the economists, "equates supply and demand." In other words it marks, in terms of money, the point where supply and demand meet, in the sale of a particular commodity.

Before considering this further it is well to bear in mind that the supply of and demand for agricultural products are, speaking broadly, subject to conditions which differ from those affecting industrial products. We may leave out of account, in this connection, what may be termed luxuries. Strawberries at Christmas, forced peaches, and pineapples are agricultural products, but, in England, at any rate, the conditions both of their supply and demand are exceptional. By agricultural products we mean those articles such as wheat, meat, milk, butter and sugar, which may be classed as necessaries of life, or are, at any rate, so regarded by many millions of people in many countries.

There are special factors affecting both supply and demand in the case of these agricultural products. Their supply is only partially under human control, as we have already seen, whereas the supply of industrial products can be increased or reduced at the will of the manufacturers. The supply of industrial products can be regulated very quickly, but the adjustment of the supply of agricultural products takes a considerable period. If more wheat is required the land must be prepared and sown at least six, and often twelve, months before an additional quantity is obtained, while if more beef is demanded it will take still longer to produce.

On the other hand the demand for agricultural products is very regular and insistent. If the supply of boots or of chairs is short, buyers can wait until it is replenished, but they cannot wait for food. Not only is the demand for food regular and insistent, but it takes priority of all other demands, so that, in the long run, the person having a limited amount to spend will spend it on food and dispense with other commodities.

For all commodities there is a supply price and a demand price, and in the case of agricultural articles each is affected by the peculiar conditions just mentioned.

The supply price, at any given time, is that price which is sufficient to maintain the existing supply. In other words it must be sufficient to cover the cost of production of those producers who are on the margin of cultivation. If it does not do so they will cease to produce and the supply will be proportionately diminished.

The demand price, at any given time, is that price at which the demand is stable. If it falls, demand will tend to increase, and if it rises, demand will tend to decrease.

These general definitions do not imply that there is at any time only one price for a particular article. The actual price at which supply and demand meet, or are "equated," varies in different markets at the same time and at different times in the same market.

An illustration of the manner in which the price

of the day for wheat is fixed at a corn market in a country town may be adapted from one given by Marshall. It is assumed for the sake of simplicity that all the wheat is of the same grade and quality. Both sellers and buyers before coming to the market will have informed themselves generally of the recent course of prices at other markets and will also have formed some opinion of their tendency in the near future. A corn dealer well acquainted with the farmers and millers of the district comes to the conclusion that at the price of 50*s*. per quarter about 1,000 quarters could be sold, that at 49*s*. some farmers would refuse to sell, and only 700 quarters could be sold, while at 48*s*. still more would refuse, and only 500 quarters could be sold. He also calculates that there would be buyers of 1,000 quarters at 48*s*., of 700 quarters at 49*s*., and of 500 quarters at 50*s*. His calculations lead him to think that if the price of 49*s*. can be established at once it will equate supply and demand, i.e. the amount procurable at that price will just equal the amount which purchasers will take at that price. He will therefore be willing to accept any offer above 49*s*. and other sellers will do the same. Buyers will be willing to buy at any price below 49*s*., but if the price rises much above it they will hold off and thus help to bring it down, while on the other hand sellers who cannot get more will also hold off and help to raise it. Thus the price of 49*s*. "has a claim to be called the true equilibrium price; because if it were fixed on at the beginning and adhered

to throughout it would exactly equate demand and supply (i.e. the amount which buyers were willing to purchase at that price would be just equal to that for which sellers were willing to take that price); and because every dealer who has a perfect knowledge of the circumstances of the market expects that price to be established."

This theoretical example helps to explain the process by which the prices at a market tend to a common level for the same product and to establish the standard for other products of the same kind, but of different qualities.

As a general rule the larger the market for any product the more prices tend to a common level. There may, for instance, be a wide difference in the price of potatoes of the same kind on the same day at different local markets, but wheat, for which there is a world market, shows little difference in price for the same quality, allowing for cost of delivery.

All market prices include in some degree cost of transport. Theoretically the price, unless otherwise expressly specified, is the price on the spot, i.e. delivered at the market. The original basis of a market price, as we have already seen, was that the goods sold were in the market at the time of sale. In practice, however, the cost of transport, and time and place of delivery are usually arranged between buyer and seller. In internal trade sales are frequently made "f.o.r."—i.e. free on rail. In such cases the

cost of delivery to the railway, and of loading into railway trucks falls on the seller. Other common terms of sale are "f.o.b."—i.e. loaded on to a vessel at the port of shipment, the buyer being liable for freight, insurance on voyage, and landing charges—and "c.i.f.," where the selling price includes cost, insurance and freight. For produce lying in warehouses, cold stores or granaries the price is usually "ex-store," the cost of transport from that point falling on the buyer.

It is necessary to bear in mind that the market price and the farm price are not the same. In some cases the difference is relatively unimportant, but confusion of the two may lead to misunderstanding. Sales on the farm are comparatively rare. Cattle and sheep are sometimes bought on the farm by dealers or butchers and collected by them at their cost. Sometimes a crop may be sold standing, and this is a not uncommon practice in fruit-growing and potato-growing districts.

That the prices of agricultural products are subject to extreme variations from year to year, and even in the same year, is well known. One or two instances may be quoted, avoiding the period since 1914 in which the War was the dominant economic influence.

The following extract from a table given in the Year Book of the United States Department of Agriculture shows the fluctuations in the Chicago cash price for No. 1 Northern Spring Wheat in the years and months shown. The prices are in cents per bushel:

Year.	December.		Following May.	
	Low.	High.	Low.	High.
1887 . .	75	79	81	89
1888 . .	97	105	77	95
1889 . .	77	80	90	100
1895 . .	54	65	57	68
1896 . .	75	93	69	98
1897 . .	92	109	117	185
1898 . .	63	70	69	79

The average farm price of apples in the United States in the four years 1910–13 was successively 86, 76, 67, and 90 cents per bushel. The average farm price of barley in the United States rose from 60 cents per bushel in 1910–11 to 84 cents per bushel in the following year, falling to 53 cents in 1912–13.

The fluctuations in the average price of potatoes in England at two periods were :

Year.	Per Ton.	Year.	Per Ton.
	s.		*s.*
1880	130	1901	78
1881	85	1902	69
1882	95	1903	84
1883	105	1904	90
1884	75	1905	65

The cause of the violent fluctuations in price of which these are examples is the difference in the amount of supplies in one year as compared with another. As already observed the demand for

agricultural products from year to year is peculiarly stable, whereas production is very variable, with almost sensational effect on the markets.

As is pointed out in a Report issued by the English Ministry of Agriculture (Economic Series, 2) these economic conditions give rise to curious anomalies. Not only may an unusually abundant crop cause a heavy fall in price, but the effect may be so great that the total value of a large crop may be less than that of a small one. It has been calculated that American growers of cotton receive more for a crop of nine million bales than for one of thirteen million bales, while American farmers receive more for a wheat crop of 700 million bushels than for one of 1,000 million bushels. The English hop crop has frequently furnished instances of this anomaly. In 1908 a crop of 471,000 cwts. realized £1,295,000 and in 1909 a crop of 214,000 cwts. sold for £1,648,000. In 1913 a crop of 256,000 cwts. sold for £2,342,000, and in the following year a crop of 507,000 cwts. realized only £2,003,000. In the years of plenty prices averaged £2 15*s.* and £3 19*s.*, and in the years of scarcity £7 14*s.* 1*d.* and £9 3*s.* per cwt.

The liability to great changes in the market value of agricultural products is one of the peculiar difficulties of the business of farming. It is one reason for the old tradition that the interests of the farmers are antagonistic to the interests of the general public, and that their profits are greatest when most hardship is inflicted on consumers. But a longer

and broader view of agricultural interests is now becoming, happily, more prevalent. It is increasingly recognized that the farmer's best economic interest lies in the greatest possible stability of prices, and not in an irregular alternation of high and low prices.

The only way in which farmers can influence the level of prices is by aiming at the greatest possible regularity of supplies. It is true, as previously pointed out, that their power in this respect is limited, and that the plenitude or scarcity of supplies of most agricultural products depends on Nature and is beyond human control. But within their limits farmers can do much to regularize supplies. Some of the possible methods tending in this direction have already been indicated. There is one factor which is essential to any kind of intelligent action and that is accurate information. Every year a farmer has to make, so to speak, "a plan of campaign." On a large arable farm, indeed, he has to make it, in general outline, for some years ahead. But the "plan" may be modified from time to time, and it is the farmer's task to adapt his production, to the best of his judgment, to the probable demand for his products. His judgment can only be intelligently formed if he has at his command all the available facts. As the demand for his products and the price realized for them are in most cases influenced, if not governed, by competitive supplies from many parts of the world he can form no opinion of any value, unless he takes

into account the conditions in other countries as well as his own.

Up to comparatively recent years all forecasts of future supplies were little more than guesses. Those who were in the trade relied mainly on reports either from their own representatives or from business connections in the various countries concerned. In a few countries there were official statistics of the acreage of certain crops, but in some cases these were of doubtful trustworthiness, and in nearly every case they were incomplete. Great Britain was practically the first country to collect annual statistics of crops and live stock, but the system was not started until 1866, and it was not until nearly twenty years later that annual statistics of production were obtained.

During the last fifty years great progress has been made in the provision of statistical data relating to Agriculture. By the influence, in the first instance, of the International Statistical Institute, and latterly of the International Agricultural Institute, the collection of agricultural statistics on a more or less uniform system has been undertaken by the Government of nearly every country. It is consequently now possible by careful study of the statistical material available to arrive at conclusions which are founded mainly on facts, and not merely on opinions. It is true that there are still deficiences in the statistics. They are not yet complete nor is the system by which they are obtained in all cases satisfactory. But the

defects are rapidly disappearing, and it may fairly be said that the chief facts relating to the world's agriculture are now available.

It is, however, one thing to collect information and another to disseminate it to those for whose benefit it is collected. It is the business of every Government to take steps to disseminate promptly to farmers all the information likely to be serviceable to them in such a form as will enable it to be readily understood.

Assuming that a farmer has taken full advantage of all the available information, he has to make up his mind whether the prospects of future supplies, and consequently of prices, justify him in attempting to increase or decrease his output of any particular product.

It has been said that the farmers' interests are better served by stable prices than by violent fluctuations. It may be added that they are better served in the long run by moderate rather than high prices. High prices may for the time being bring larger profits but they check demand, and may, if continued, permanently restrict it. That demand for the staple agricultural products is constant as compared with that for other classes of commodities does not imply that it is wholly unaffected by the level of price. The demand for bread is probably more inelastic than that for any other article, but it is in some measure responsive to price. The public may not actually eat less bread when the price of the loaf is high, but they

are more careful and less wasteful in its use, which has the same effect on the extent of their purchases. In some products the reaction on demand of a rise in price is very evident. In England at the present time the retail price of milk is relatively high, or it is thought by the public to be so, which has the same effect. No exhortations to "drink more milk" and no demonstrations of its dietetic value will, in these circumstances, have any appreciable effect on the demand, whereas a drop in price of, say, 1*d.* per quart would immediately increase consumption. Apples may be taken as another example. The demand for them is steadily increasing in Great Britain because supplies have become more plentiful and prices are generally lower.

Whatever may be done by better regulation of supplies can at most only restrict the range of the yearly or seasonal fluctuations which are bound to occur in the case of most agricultural products from causes which are uncontrollable.

There is another cause for changes in the price level of agricultural products which is not connected with seasonal variations in the quantity of available supplies or with the expansion or restriction of demand. Within the last hundred years there have been periods of high prices and of low prices, which have had no relation to the abundance or scarcity of supplies in particular years.

Without going into history this point may be made clear by reference to the "index numbers" for agricultural products in England and Wales

prepared by the Ministry of Agriculture. An "index number" is calculated by taking the average prices for a certain period—in this case for a year—and expressing them in a single figure for comparison with a corresponding figure for some other period which is taken as the base. The figure for the base period is put at 100 so that the figures for other periods show the percentage differences above or below that period. In the following table the period 1911–13 (that is the three years immediately preceding the War) is taken as the base. The changes in the average price realized for the principal agricultural products in each of the three years 1924–26 are shown:

Product.	1911–13.	1924.	1925.	1926.
Wheat	100	152	160	164
Barley	100	165	148	131
Oats	100	138	138	127
Fat cattle	100	153	151	141
Fat sheep	100	187	183	157
Pigs, Baconers	100	133	163	180
,, Porkers	100	139	164	184
Hay	100	101	101	107
Potatoes	100	257	204	151
Milk	100	170	170	170
Butter	100	164	167	150
Cheese	100	162	165	157
Poultry	100	172	163	159
Eggs	100	168	170	152
Fruit	100	178	198	164
Wool	100	192	137	120
Beans and Peas	100	161	142	142
Vegetables	100	165	167	155

It will be seen that there are very substantial differences in the same year in the percentage by which the various products exceeds the level of 1911–13. These differences are in the main caused by variations of supply. But the important fact to note is that the prices of all products are markedly higher than in the years before the war. If the figures for all the products are added together and "weighted" according to the importance of each of them it is found that the general index number for 1924 is 161, for 1925, 159, and for 1926, 151.

A similar set of figures for commodities of which farmers are buyers and not sellers, brings out the same fact:

Commodity.	1911–13.	1924.	1925.	1926.
Barley (imported) .	100	149	144	122
Oats (imported) .	100	135	146	130
Maize	100	167	167	128
Milling offals . .	100	150	143	122
Oil cakes . . .	100	153	150	123
Brewers' grain . .	100	147	154	122
Barley meal and maize meal . .	100	155	153	126

If the table on page 84 is referred to it will be seen that the index numbers (which are there shown in a slightly different form) of agricultural wages and of the cost of living also show a substantial increase above the pre-war level.

It is evident from these various figures that there

has been some cause operating to raise the prices not only of agricultural products but of all commodities above the pre-war level. That cause is the reduction in the value, or purchasing power, of money.

It is not easy for the ordinary person to grasp the fact that the value of money can change. It appears so obvious that a sovereign (or £1 Treasury Note) is a sovereign, and a shilling is a shilling at all times and places. That money will not "go so far," that is buy as much, as before the war every one knows, but that is because "everything is dearer."

A little reflection will convince anyone having an elementary knowledge of history that it is at least possible for coins of the same nominal value to change in real value. In the thirteenth century, for example, 4*d*. would pay for mowing an acre, and 5*s*. would buy a quarter of wheat. In the early part of the fifteenth century the cost of a labourer's board was 9*d*. per week, and in the sixteenth century lodgings were let for 2*d*. per week. It is clear that the value of shillings and pennies was different in those days although they were called the same.

There is, indeed, much more recent proof that the nominal value of money is different from its real value. Where paper money was issued in large quantities in Germany and other countries after the war, the value of the monetary unit fell until it became almost valueless for the purchase of commodities. An increase of a billion times in

prices, reckoned in marks, was obviously due to the reduced value of the mark and not the increased value of commodities.

It may be said that this might be attributable to the reckless multiplication of paper marks which had practically no intrinsic value, but it does not prove that metallic money changes in value. But the experience of Germany at least proves that changes in the price of commodities may be due to changes in the value of the monetary unit by which they are reckoned.

The difficulty felt by many in understanding even the rudiments of a very abstruse subject is that of disconnecting in their minds the two words " price " and " value." It is so common, and natural, to speak of the price of a thing as its value that it requires a mental effort to think of them separately. Money is the medium of exchange and price is the expression of value in terms of money. But the German experience shows that if there were no limit to the supply of the medium of exchange, i.e. money, price would become meaningless.

Any attempt to discuss the subject at length would be impossible here, and it is sufficient for our purpose to recognize that the value or purchasing power of money does change from time to time, and that such changes cause alterations in the general level of prices which are independent of variations in price arising from seasonal differences in the relation of supplies to demand.

It is necessary to be clear on this point because

it bears directly on a question which, since the war, has aroused the attention of farmers on both sides of the Atlantic. Vigorous representations have been made, particularly in the United States, and also with less vigour in Great Britain, that the Government should intervene to "stabilize" the prices of agricultural products. The word has become current in the discussion of agricultural questions and it is sometimes used by persons who appear to have different ideas of what "stabilization" means in connection with prices, and vague notions about the means by which it could be effected.

It may be hoped that sufficient has been said above to make it clear that prices cannot really be "stabilized." If they could be they would cease to be prices in any intelligible economic meaning of the term. It is, of course, quite possible for a Government to "fix" prices, as was done in Great Britain during the war. A Government has the power to make an arbitrary decree that a particular commodity shall only be sold at a particular price and to punish those who attempt to sell it at any other price. But in fixing the price it is on the horns of dilemma. If the price is so high that every one engaged in the production and distribution of the commodity, however inefficient he may be, is sure of a profit, the public will be compelled to subsidize inefficiency. If the price is such as to make profits uncertain, many of those engaged in the business will retire from it. In either case the Government will be forced either to abandon the attempt or to take

control of the whole business of the sale and distribution, and place upon the taxpayers the risk of the undertaking. The arguments for and against the nationalization of the means of production and distribution are political and therefore outside the scope of this book.

It should be added that, although the forcible "fixing" of prices is only possible under a system of State trading, it is urged by some who have given special attention to monetary problems that a greater degree of stability in the level of prices generally and the avoidance, in a large measure, of the risk of periodic inflation and depression might be attained by agreed International action.

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